ORDER NO. SD8012-1817

Service Manual

Space Dimension Controller

SH-8030

[E], [EG], [EK], [XL], [XA], [EF], [EH], [EB], [EI]

SH-8030(K)

[E], [EG], [XL], [XA], [EH]

*** The cabinet and front panel are available in black color and silver types.**
*** The black type model is provided with (K) in the service manual.**

Areas

* [E] and [EG] are available in Scandinavia and European except United Kingdom, France, Holland, Belgium and Italy.
* [EK] is available in United Kingdom.
* [XL] is available in Australia.
* [XA] is available in Asia, Latin America, Middle East and Africa.
* [EF] is available in France.
* [EH] is available in Holland.
* [EB] is available in Belgium.
* [EI] is available in Italy.

TECHNICAL SPECIFICATIONS (Specifications are subject to change without notice for further improvement.)

(DIN 45 500)

Frequency response		
line in		7 Hz~150 kHz, +0 dB, −3 dB
phono		20 Hz~20 kHz, RIAA±0.5 dB
mic 1, mic 2		35 Hz~30 kHz, −3 dB
Maximum output voltage		5V (20 Hz~20 kHz)
Rated total harmonic distortion		
line in		0.005% (20 Hz~20 kHz, 150 mV output)
Input sensitivity	line in, aux	150 mV
	tape	170 mV
	phono	2.5 mV
	mic 1, mic 2	1.5 mV
Rated output voltage	line out	150 mV
	rec out	150 mV
Signal to noise ratio	line in	77 dB (80 dB, IHF, A)
Maximum input voltage (T.H.D. 0.2%)		
line in		5V (1 kHz)
phono		120 mV (1 kHz)
mic 1, mic 2		70 mV (1 kHz)
Channel separation, 1 kHz		70 dB
Channel balance, 250 Hz~6300 Hz		±1.0 dB
Input impedance	line in, aux, tape	30 kilohms
	phono	47 kilohms
	mic 1, mic 2	10 kilohms
Output impedance	line out	600 ohms
	rec out	600 ohms
Dimension controller		
echo time		90 msec.
sound image localization		30 deg. (backward)
Frequency equalizer		
band level controls		+12 dB~−12 dB (5 elements continually variable per channel)
center frequency		60 Hz, 250 Hz, 1 kHz, 4 kHz, 16 kHz

■ GENERAL

Power consumption	25W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 120 × 280 mm (16-15/16" × 4-23/36" × 11-1/32")
Weight	4.8 kg (10.6 lb.)

Note: Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

SH-8030

TECHNISCHE DATEN Spezifikationen können infolge von verbesserungen ohne Ankündigung geändert werden.

(DIN 45 500)

Frequenzgang		
line in		7 Hz ~ 150 kHz, +0 dB, −3 dB
phono		20 Hz ~ 20 kHz, RIAA ± 0.5 dB
mic 1, mic 2		35 Hz ~ 30 kHz, −3 dB
Maximate Ausgangsspannug		5V (20 Hz ~ 20 kHz)
Nennklirrfaktor		
line in		0.005% (20 Hz ~ 20 kHz, 150 mV ausgang)
Eingangsemphindlichkeit		
line in, aux		150 mV
tape		170 mV
phono		2.5 mV
mic 1, mic 2		1.5 mV
Nennausgangsspannung		
line out		150 mV
rec out		150 mV
Geräuschabstand	line in	77 dB (80 dB, IHF, A)
Maximale Eingangsspannung (T.H.D. 0.2%)		
line in		5V (1 kHz)
phono		120 mV (1 kHz)
mic 1, mic 2		70mV (1 kHz)
Übersprechdämpfung	1 kHz	70 dB
Kanalabweichung	250 Hz ~ 6300 Hz	± 1.0 dB
Eingangsimpedanz	line in, aux, tape	30kΩ
	phono	47kΩ
	mic 1, mic 2	10kΩ
Ausgangsimpedanz	line out	600Ω
	rec out	600Ω
Raumklangregelung		
nachhall		90 msec.
lokalisierung		30° (rückwärts)
Frequenzgangregelung		
regelbereich		+12 dB ~ −12 dB (in fünf voneinander unabhängigen Frequenzbereichen stufenlos einstellbar)
mittenfrequenzen		60 Hz, 250 Hz, 1 kHz, 4 kHz, 16 kHz)

ALLGEMEINE DATEN

Leistungsaufnahme	25W
Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (B×H×T)	430 x 120 x 280 mm
Gewicht	4.8 kg

Bemerkung:
Der Gesamtklirrfaktor wurde mit einem digitalen Rauschspektrometer (Anlage H.P. 3045) gemessen.

DONNEES TECHNIQUES Sujet à changment sans préanis.

(DIN 45 500)

Réponse de fréquence		
line in		7 Hz~150 kHz, +0 dB, −3 dB
phono		20 Hz~20 kHz, RIAA±0,5 dB
mic 1, mic 2		35 Hz~30 kHz, −3 dB
Tension de sortie maximum		5V (20 Hz~20 kHz)
Distortion harmonique totale		
line in		0,005% (20 Hz~20 kHz, sortie 150 mV)
Sensibilité d'entrée	line in, aux	150 mV
	tape	170 mV
	phono	2,5 mV
	mic 1, mic 2	1,5 mV
Tension de sortie nominale	line out	150 mV
	rec out	150 mV
Signal/Bruit	line in	77 dB (80 dB, IHF'A)
Tension d'entrée maximum (T.H.D. 0,2%)		
line in		5V (1 kHz)
phono		120 mV (1 kHz)
mic 1, mic 2		70 mV (1 kHz)
Séparation des canaux, 1 kHz		70 dB
Equilibrage des canaux, 250 Hz~6300 Hz		±1,0 dB
Impédance d'entrée	line in, aux, tape	30kΩ
	phono	47kΩ
	mic 1, mic 2	10kΩ
Impédance de sortie	line out	600Ω
	rec out	600Ω
Compensateur ambiophonique		
délai d'echo		90 msec.
localisation de l'image sonore		30 deg (Vers l'arrière)
Egalisateur de fréquences		
curseurs linéaires		+12 dB~−12 dB (5 éléments valiables par canal)
fréquences fondamentales		60 Hz, 250 Hz, 1 kHz, 4 kHz, 16 kHz

■ DIVERS

Consommation	25W
Alimentation	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L×H×Pr)	430 × 120 × 280 mm
Poids	4,8 kg

Remarque: On mesure la distorsion harmonique totale au moyen d'un analyseur de spectre digital (Système HP. 3045).

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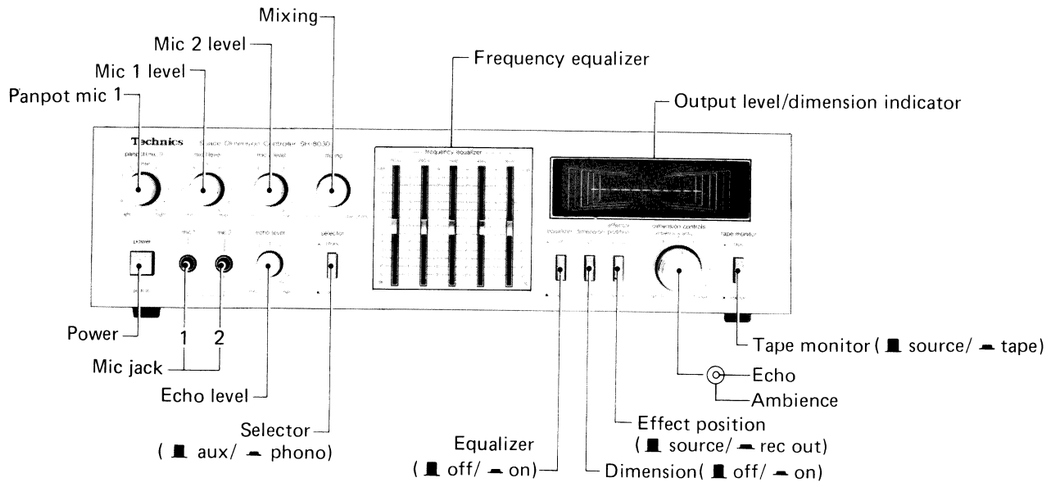
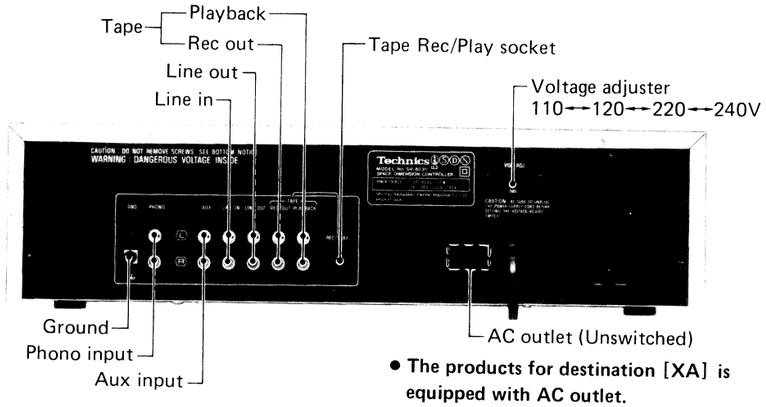
Technics

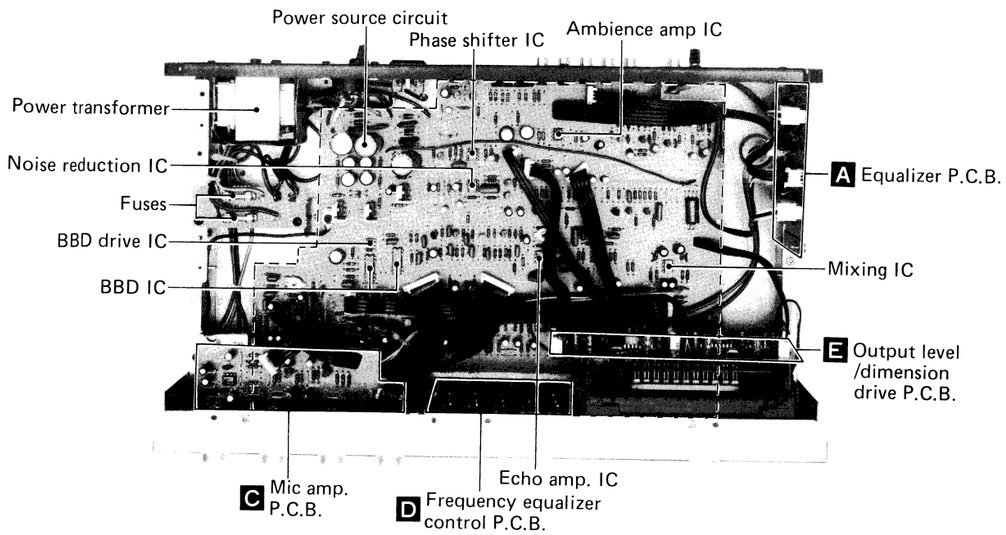
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

■ LOCATION OF CONTROLS





● **The products for destination [XA] is equipped with AC outlet.**



■ DISASSEMBLY INSTRUCTIONS

● How to remove the front panel and bottom board

1. Remove the 4 setscrews (Fig. 1 : ❶ ~ ❹) on the side of the cabinet.
   Slightly push the cabinet and then lift it to remove.
2. Remove the 6 (Fig. 2 : ❺ ~ ❿) setscrews of the bottom board.
   Slightly push the bottom board in the direction of the arrow and then lift it to remove.

● How to remove the front panel

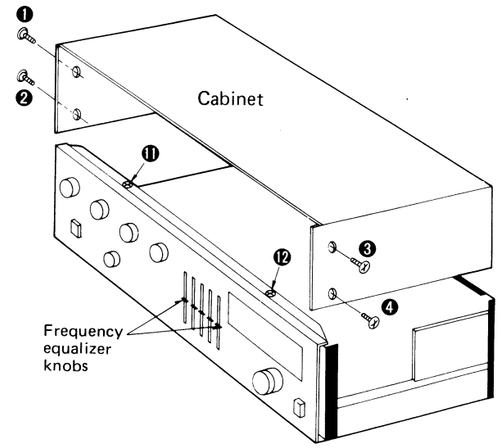
1. Remove the cabinet.
2. Remove the 5 frequency equalizer knobs (Fig. 1).
3. Remove the 4 setscrews (Fig. 1 : ⓫ ~ ⓬, Fig. 2 : ⓭ ~ ⓮) of the front panel.
4. Remove the fixing lug for the frequency equalizer and dimension indicator printed circuit board (Fig. 3 : ⓯).

● How to remove the output level/dimension indicator printed circuit board

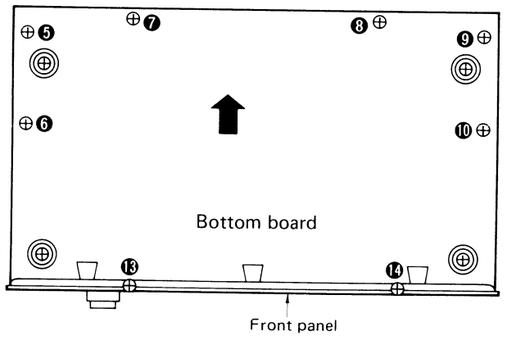
1. Remove the cabinet.
2. Remove the front panel.
3. Press the output level/dimension indicator printed circuit board fixing lugs (Photo 1 : ⓰ ~ ⓱) in the direction of the arrows Ⓐ and Ⓑ.
   Then remove the printed circuit board in the direction of the arrow Ⓒ.
4. Press the output level indicator printed circuit board fixing claws (Photo 2 : ⓲ ~ ⓳) in the direction of the arrows Ⓓ and Ⓔ.
   Then remove the printed circuit board in the direction of the arrow Ⓕ.
5. Detach the setscrew (Photo 3 : ⓴) and remove the output level/dimension indicator toward you.
6. Remove the right or left lamp printed circuit board fixing lugs (Photo 4 : ㉑ ~ ㉓) of the output level/dimension indicator in the direction of the arrows Ⓗ, Ⓙ and Ⓚ respecitively.
7. When replacing the scale, disengage the reflection plate lugs (Photo 5 : ㉔ ~ ㉕) in the direction of the arrow and remove the reflection plate.
   Then the scale can be replaced.

NOTE:

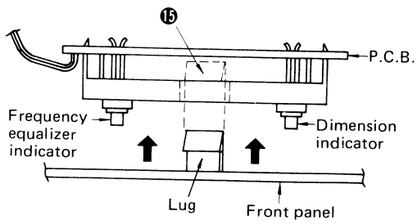
1. When inserting the scale into the case, make sure that the scale is clean.
2. For the position of each scale, refer to Fig. 4.



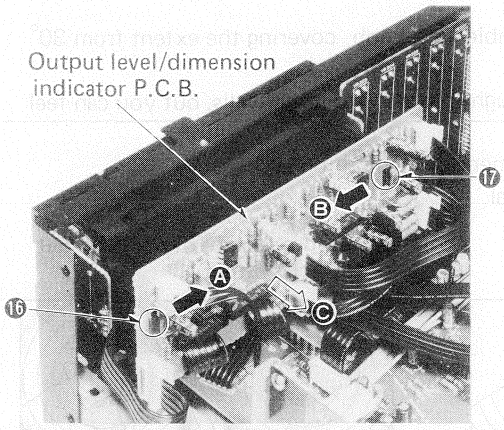
[Fig. 1]



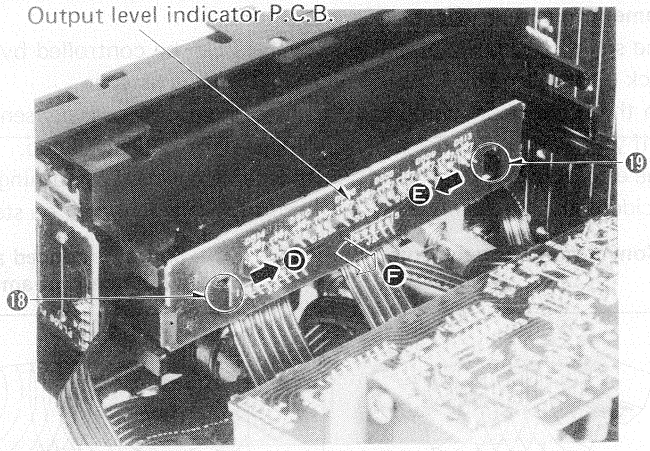
[Fig. 2]



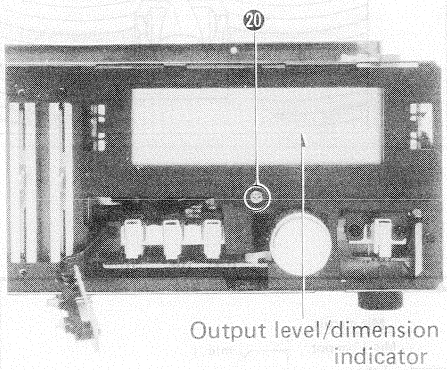
[Fig. 3]



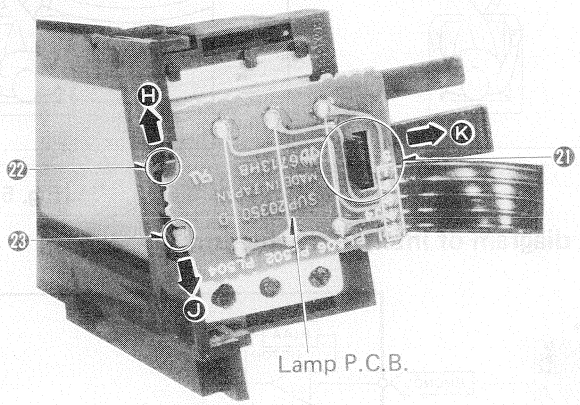
[Photo 1]



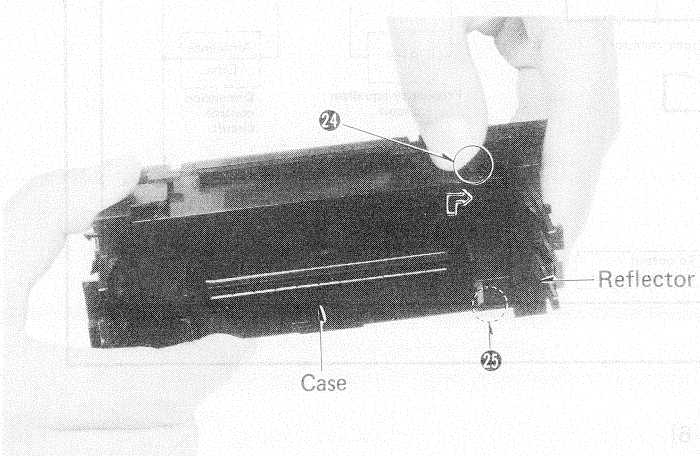
[Photo 2]



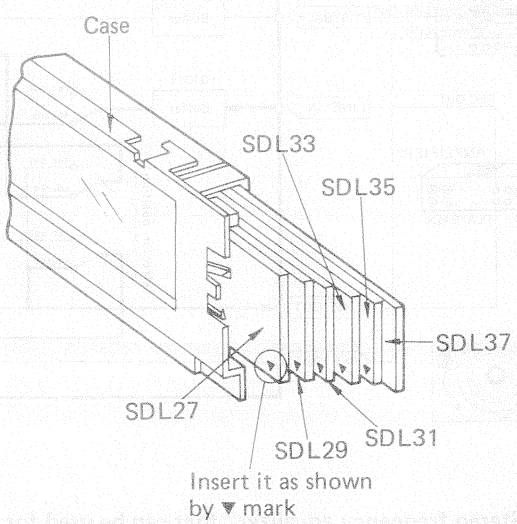
[Photo 3]



[Photo 4]



[Photo 5]



[Fig. 4]

■ FEATURES

1. The dimension control consists of "ambience" to control the sound extension and "echo" that uses BBD delay element to add an effect.

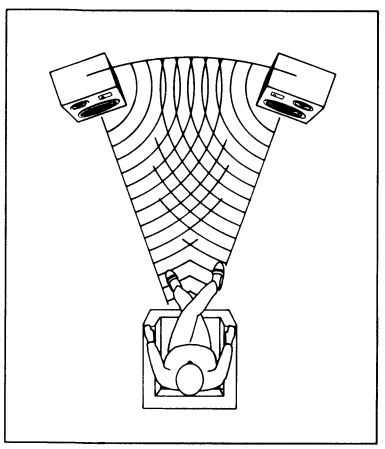
The sounds from the two front speakers can be controlled by the "ambience" knob, covering the extent from 30° back on the right to 30° back on the left of the listener.

On the other hand, the size of the listening room is usually sensed through the echo from the walls, but you can feel as if you were in a concert hall by adjusting the "echo" knob.

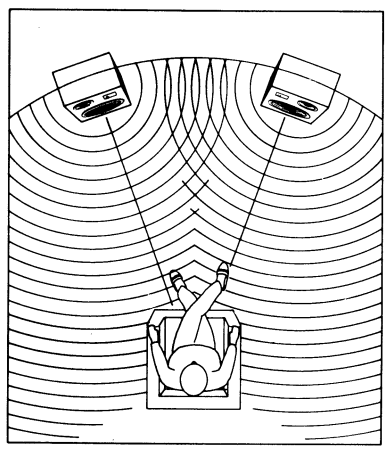
The effects of the dimension control can be checked by turning the "dimension" switch on and off.

Incidentally, the "ambience" of this unit is effective only on stereo signal.

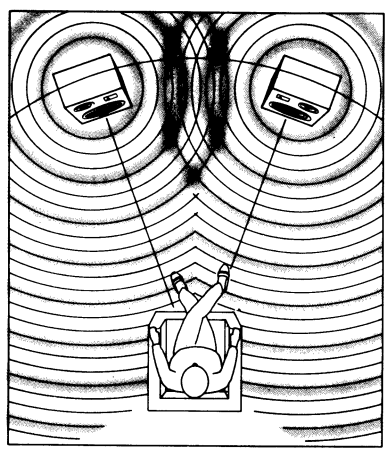
Conventional stereo sound



Sound produced after adjustment of ambience

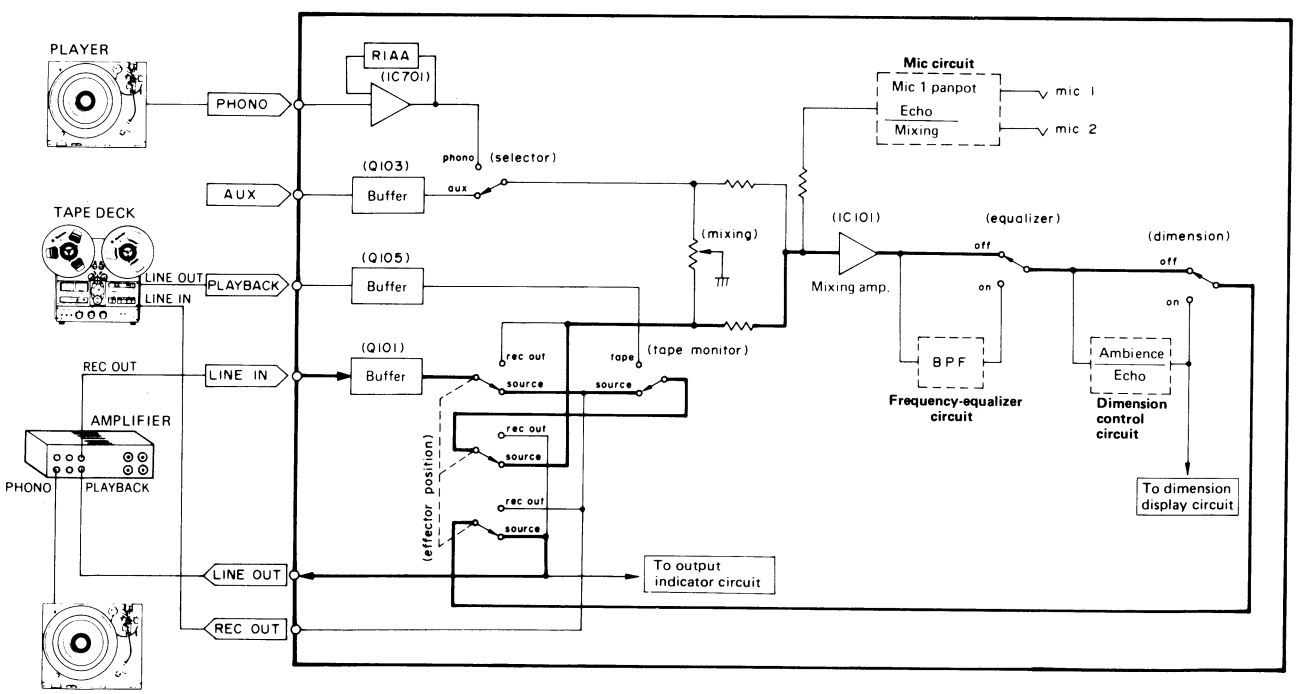


Sound produced after adjustment of the echo effect



[Fig. 5]

• Block diagram of internal mechanism



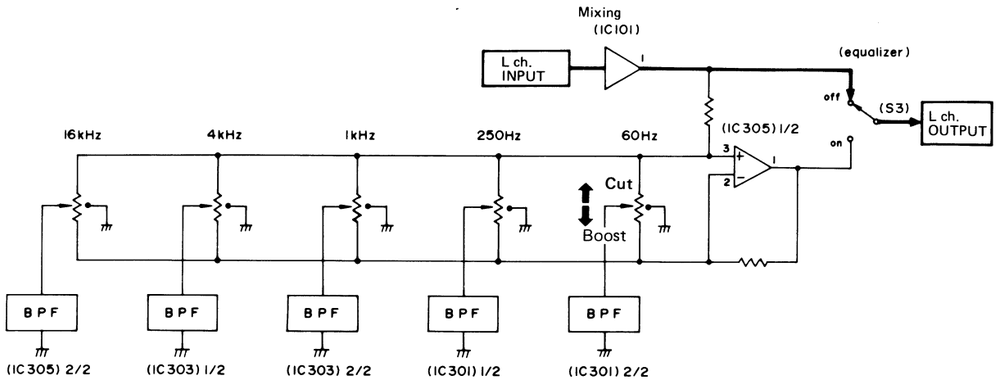
[Fig. 6]

2. "Stereo frequency equalizer" that can be used for correcting tone quality and for creating desired tones.

The five elements of frequency equalizer (60Hz, 250Hz, 1kHz, 4kHz, 16kHz) arranged at 2 octave intervals are capable of ±12dB level control of sound of each band. This mechanism can be widely used for prevention of howling during use of microphone, for vocal emphasis and for correction of listening room characteristics.

Also, the effects of the stereo frequency equalizer can be checked by turning the "equalizer" switch on and off.

- **Block diagram of frequency equalizer circuit**

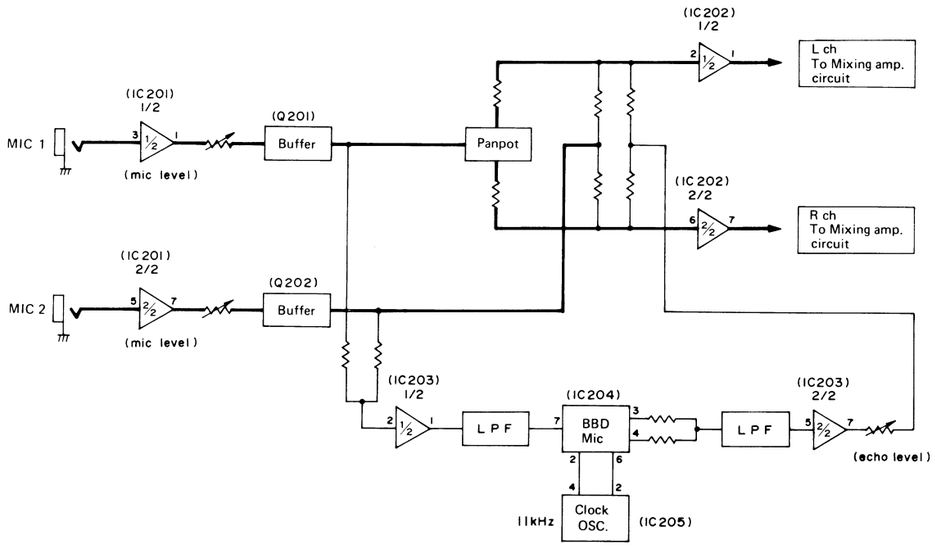


[Fig. 7]

3. Two microphones, provided with BBD electronic echo, can be used.

Both mic 1 and 2 are provided with independent level control so that you can enjoy mixing of tape and record. The echo circuit is of electronic system using BBD delay elements, and the echo level can be freely controlled. The mic 2 is fixed at the center, while the mic 1 can be shifted to the right or left by the "panpot" knob.

- **Block diagram of mic circuit**



[Fig. 8]

4. Phase-in and phase-out can be obtained by use of two players.

Connect another player to the "PHONO" terminal on the rear, set the "selector" switch on the front to "phono" and turn the "mixing" knob, thus mixing with the player connected to the amplifier can be achieved. This function can be used for non-stop performance.

A similar performance can be obtained by connecting a tape deck or tuner to the "AUX" terminal on the rear. In this case, set the "selector" switch to "aux".

5. You can record the effects of this unit into the tape deck to enjoy the sound through car stereo.

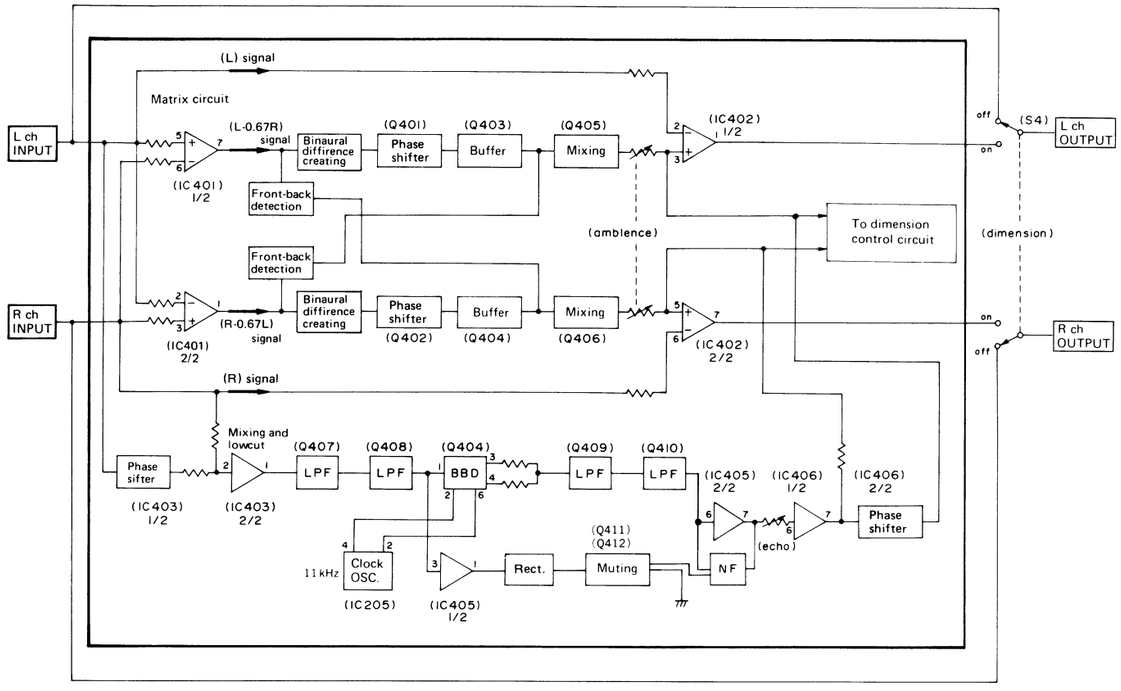
This unit is connected to the tape deck terminal of the amplifier, and the tape deck must be connected to this unit. Therefore, the tape monitor is switched by the "tape monitor" switch of this unit. Recording into the tape deck can be performed with the "tape monitor" switch set to the "source" position. When the "effector position" switch is at "source", the signal from the amplifier is recorded without passing through the circuit of this unit, and with the switch set to "rec out", the effects of this unit are recorded into the deck.

6. Sound extension and output signal level are displayed.

The extension of sound and the output signal level are displayed in combination of LED and lamp.

This function gives the listener a visual enjoyment. When the "dimension" switch is set to "off", the peak level indicator of LED displays the output signal level of this unit by 5dB step.

- **Block diagram of dimension control circuit**



[Fig. 9]

- **Principle of dimension control**

The sound image expansion technology based on ambience is that the direction of sound image can be controlled irrespective of speaker positions while using two speakers located ahead on the right and left.

When a man listens to the sound from the speakers as in Fig. 10, the direct sounds **L** and **R'** enter the left ear, while **R** and **L'** go into the right ear.

The man senses the position of speaker (position of sound image) through the frequency characteristic of **L** and **R**, time different ΔT between **L** and **L'**, **R** and **R'** to reach the ears, and sound pressure difference ΔP.

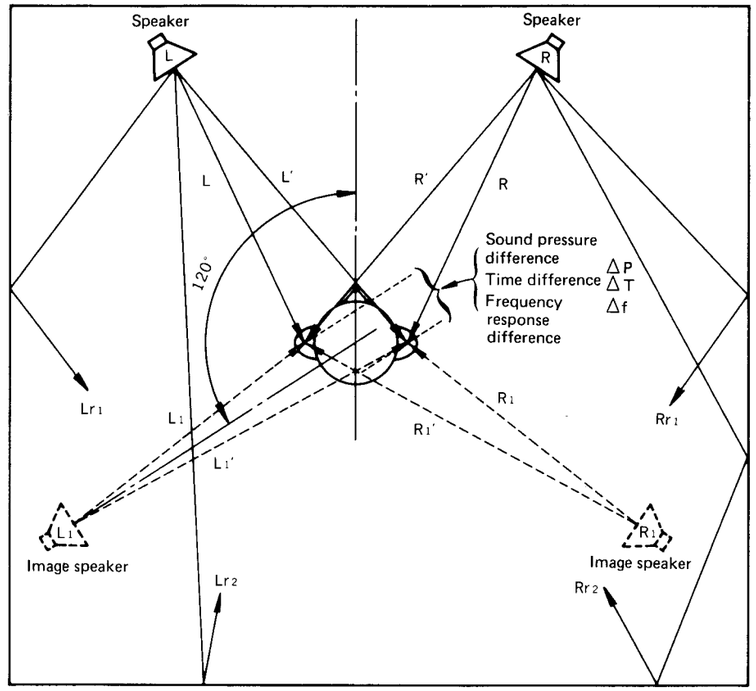
The relations can be represented as follows:

$$L' = L + (\Delta T, \Delta P)\ R' = R + (\Delta T, \Delta P)$$

Accordingly, it is possible to set the sound image at a desired position by controlling the frequency response difference Δf, time difference ΔT and sound pressure difference ΔP.

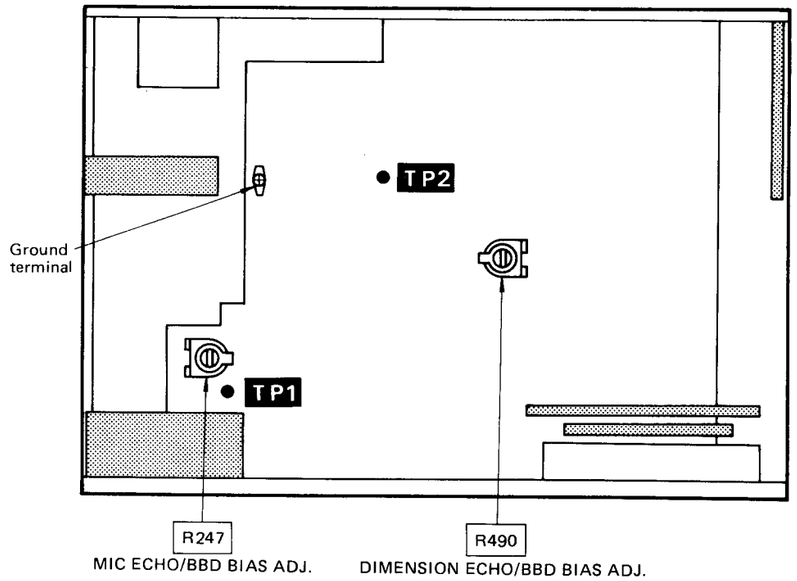
In this unit, indirect sound component is created by signal of **L** and **R**, to which Δf_1, ΔT_1 and ΔP_1 equivalent to the image speaker located at 30° back are added, then the signal is applied to the front speaker, thus the listener is given a feeling of sound extension up to 240°.

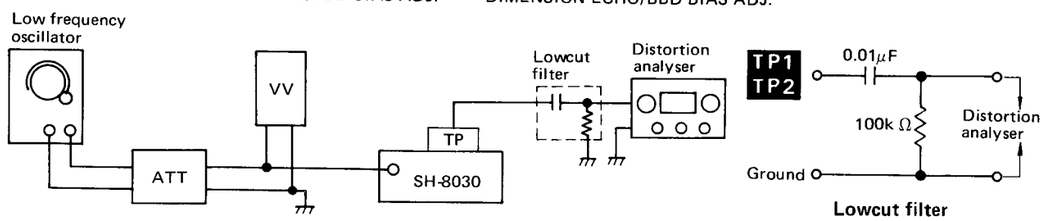
Incidentally, only direct sounds are taken into consideration in the above explanation. Actually, however, echo from the walls such as Rr_1, Rr_2 . . . . . Lr_1, Lr_2 . . . . . will enter the ears. Since the man senses the size of the room through the level of such echo and its timing, it is possible to control the size of the room, that is, the hall effect, by controlling the echo level.



[Fig. 10]

■ ADJUSTING POINTS





[Fig. 11]
[Abb. 11]

Lowcut filter
[Fig. 12]
[Abb. 12]

■ ADJUSTING INSTRUCTIONS — ENGLISH

- **Setting of controls and instruments to be used**

1. Distortion analyser
2. Low frequency oscillator (Distortion factor 0.01% or less)
3. AC electronic voltmeter
4. Attenuater
5. Low cut filter (Fig. 12)
6. Mic 1 volume . . . . . Maximum
7. Echo (Mic) volume. . . . . Minimum

- **BBD bias (mic echo) adjustment**

1. Connect the distortion analyser between TP1 and ground through lowcut filter.
2. Apply 1 kHz, 10 mV signal to microphone jack. (mic 1)
3. Adjust R247 so that the distortion minimum. (0.7% or less)

- **BBD bias (dimension echo) adjustment**

1. Connect the distortion analyser between TP2 and ground through lowcut filter.
2. Apply 1 kHz, 0.5V signal to LINE IN terminal.
3. Adjust R490 so that the distortion minimum. (0.7% or less)

■ EINSTELLUNGSANWEISUNGEN — DEUTSCH

- **Einstellung der verwendeten Regler und Instrumente**

1. Verzerrungsmesser.
2. Unterbandoszillator (Klirrfaktor 0.01% oder weniger).
3. Elektronisches Wechselstrom-Voltmeter.
4. Dämpfungsglied.
5. Niederfrequenzfilter (Abb. 12).
6. Lautstärke Mikrofon 1 . . . . . Maximum
7. Lautstärke Echo (Mikrofon). . . . . Minimum

- **BBD-Vormagnetisierungs-Abgleichung (Mikrofon-Echo)**

1. Den Verzerrungsmesser zwischen TP1 und Masse durch das Niederfrequenzfilter anschließen.
2. Signal von 1kHz, 10mV an die Midrofon-Anschlußbuches (mic 1) geben.
3. R247 auf kleinstmögliche Verzerrung abgleichen (0.7% oder weniger).

- **BBD-Vormagnetisierungs-Abgleichung (Dimention-Echo)**

1. Den Verzerrungsmesser zwischen TP2 und Masse durch das Niederfrequenzfilter anschließen.
2. Signal von 1kHz, 0.5V an die LINE IN schließen geben.
3. R490 auf kleinstmögliche Verzerrung abgleichen (0.7% oder weniger).

■ INSTRUCTIONS DE REGLAGE — FRANÇAIS

- **Réglage des commandes et des instruments à utiliser**

1. Analyseur de distorsion.
2. Oscillateur à bases fréquences. (Facteur de distorsion de 0.01% ou moins.)
3. Voltmètre électronique C.A.
4. Atténuateur.
5. Filtre de coupure de gammes basses (Fig. 12.)
6. Volume du micro 1. . . . . Maximum
7. Volume (micro) d'écho. . . . . Minimum

- **Mise au point de la polarisation (écho du mocro) BBD**

1. Brancher l'analyseur de distorsion entre TP1 et la masse par l'intermédiaire du filtre de coupure de gammes basses.
2. Appliquer un signal de 1kHz, 10mV au jack du microphone (micro 1).
3. Régler R247 de façon à ce que la distorsion soit minimale (0.7% ou moins).

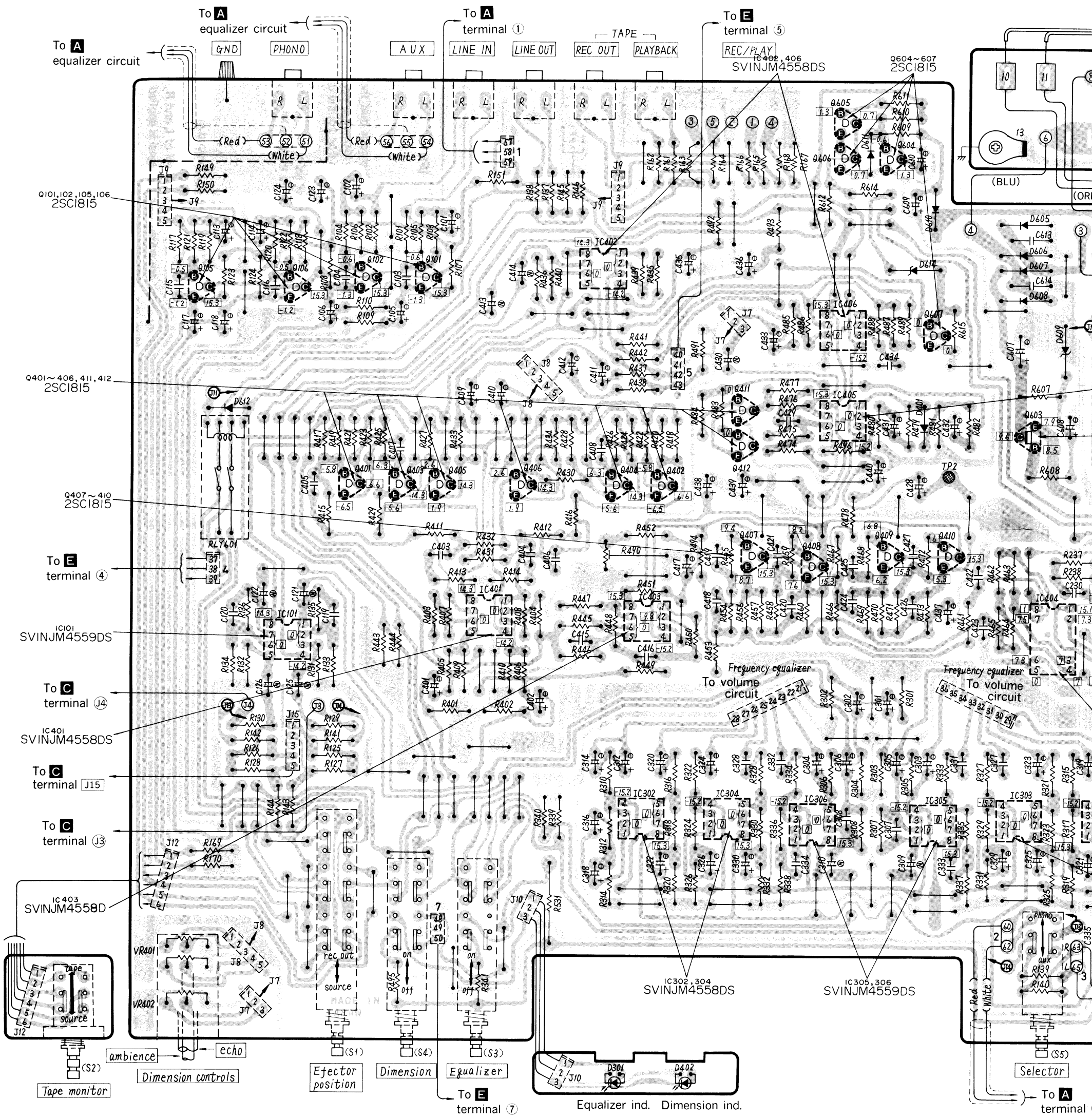
- **Mise au point de la polarisation (écho du dimension) BBD**

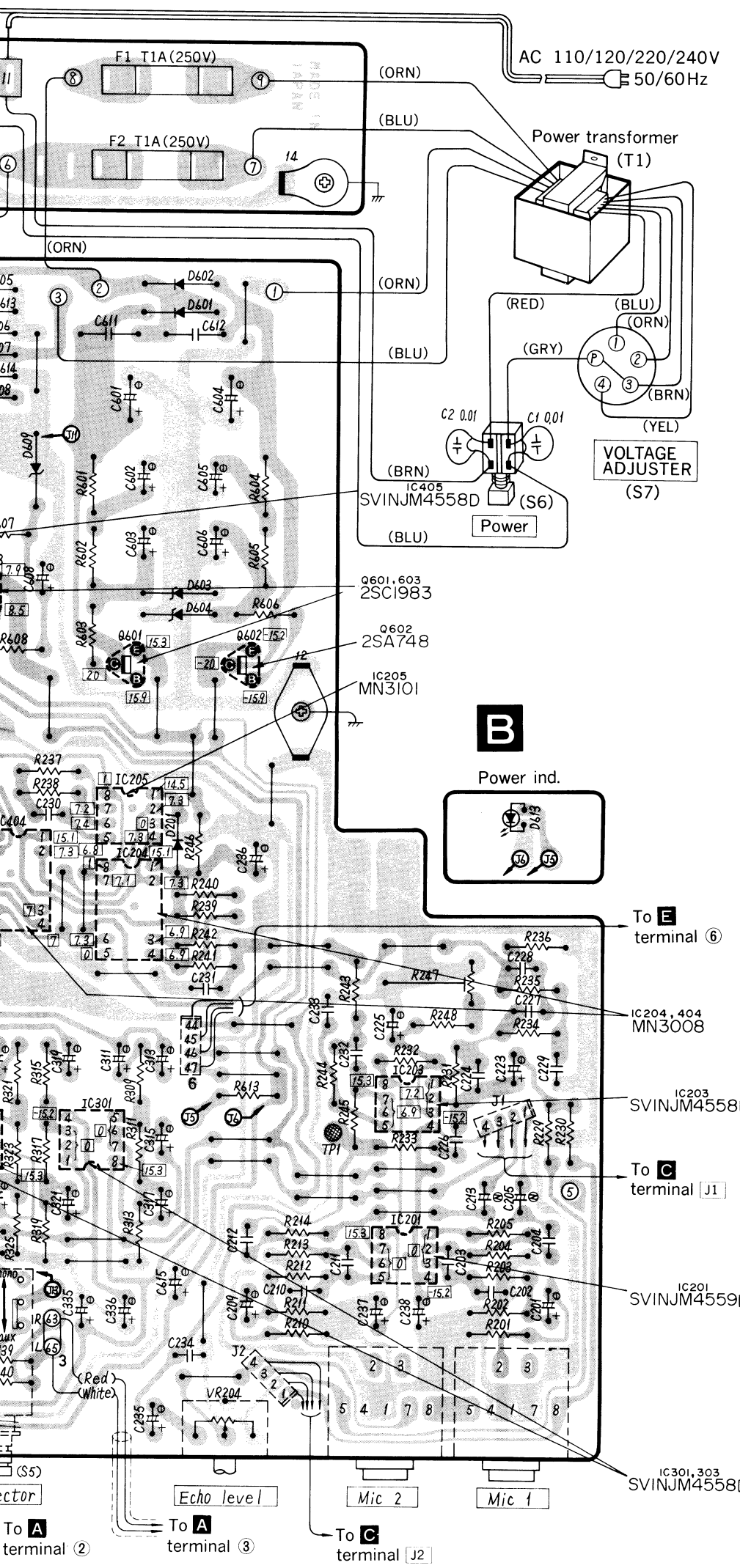
1. Brancher l'analyseur de distorsion entre TP2 et la masse par l'intermédiaire du filtre de coupure de gammes basses.
2. Appliquer un signal de 1kHz, 0.5V au LINE IN.
3. Régler R490 de façon à ce que la distorsion soit minimale (0.7% ou moins).

■ PRINTED CIRCUIT BOARDS

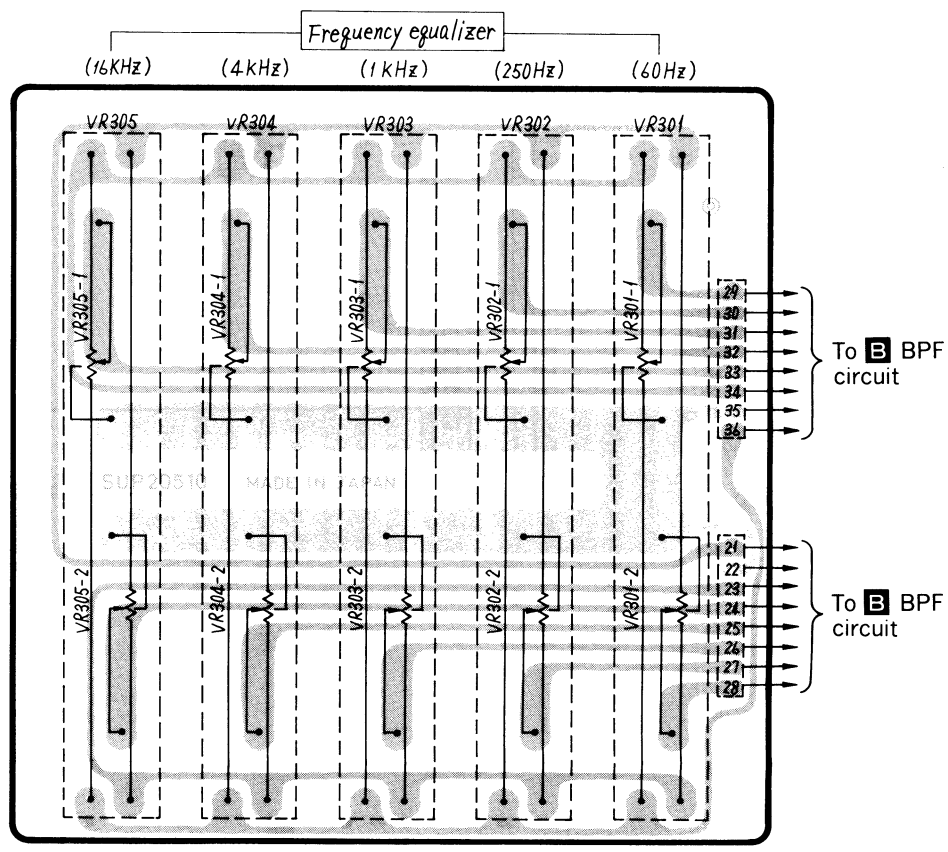
Ground (Earth) Lines

B Mic amp./frequency equalizer/BBD/dimension control/power source P.C.B.





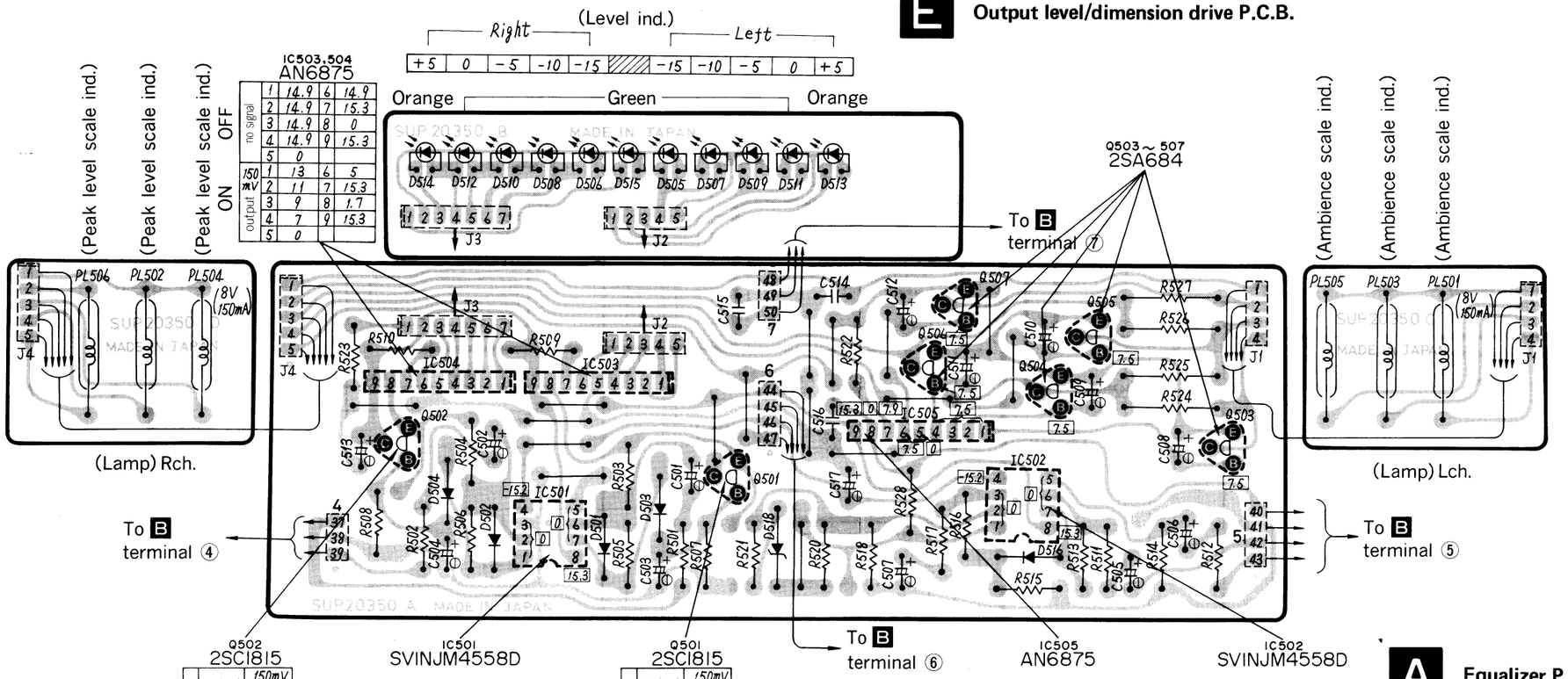
D Frequency equalizer control P.C.B.



■ PRINTED CIRCUIT BOARDS

Ground (Earth) lines

E Output level/dimension drive P.C.B.

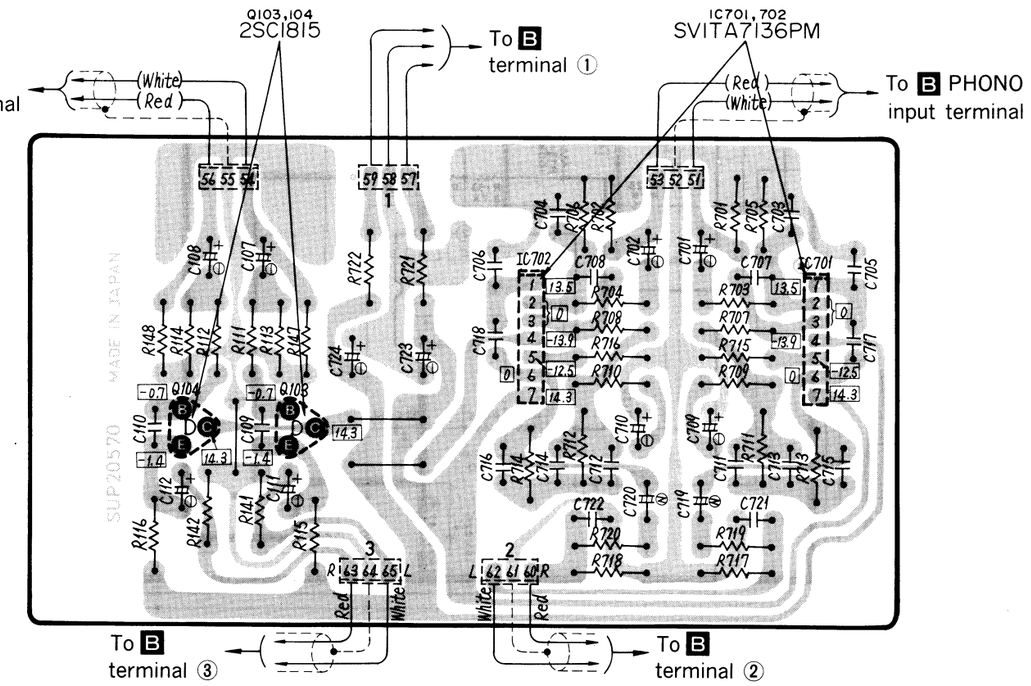


	no signal	150mV output
E	0	1.7
C	15.3	15.3
B	0	2.3

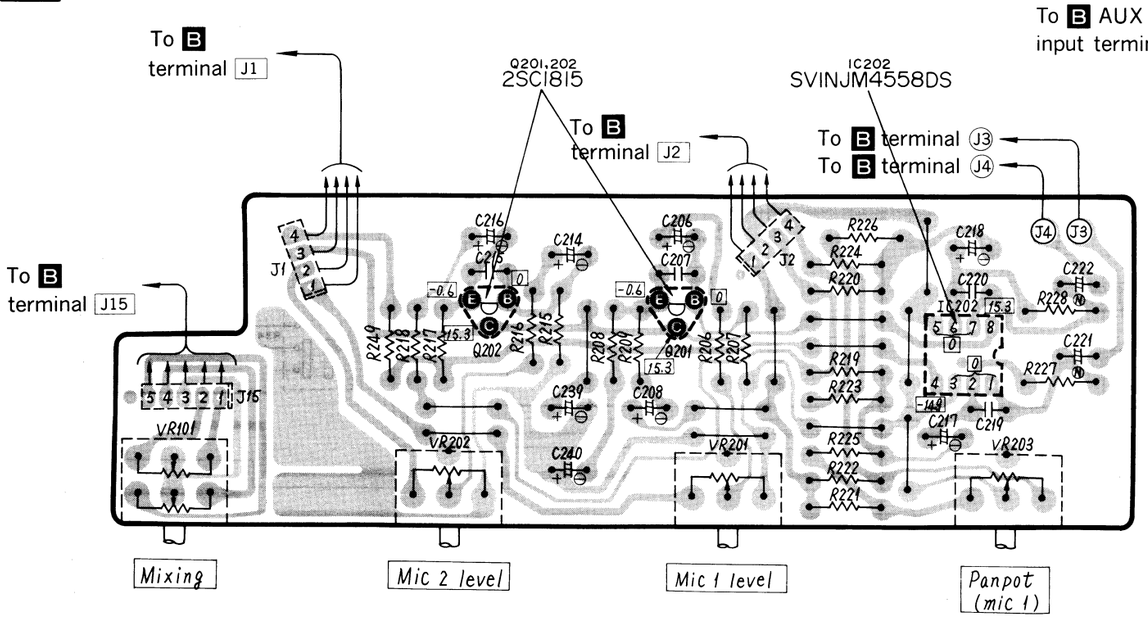
	no signal	150mV output
E	0	1.7
C	15.3	15.3
B	0	2.3

		no signal		150mV output
no signal	1	14.9	6	14.9
	2	14.9	7	15.3
	3	14.9	8	0
	4	14.9	9	15.3
	5	0		
150mV output	1	13	6	5
	2	11	7	15.3
	3	9	8	1.7
	4	7	9	15.3
	5	0		

A Equalizer P.C.B.



C Mic amp. P.C.B.



■ REPLA

Notes: 1.
2.

Ref. No.	
INTEGRATED CI	
IC101, 201, 305, 306 IC202, 203, 301 ~ 304 401 ~ 403, 405, 406, 501, 502 IC204, 404 IC205 IC503 ~ 505 IC701, 702	
TRANSISTORS	
Q101 ~ 106, 201, 202, 401 ~ 412, 501, 502, 604 ~ 607 Q503 ~ 507 Q601, 603 Q602	
DIODES	
D201, 401, 501 ~ 504, 516, 610 ~ 612 D301, 402 D505 ~ 512, 515 D513, 514 D518 D601, 602, 605 ~ 608 D603, 604 D609, 614 D613	
TRANSFORMER	
T1	
VARIABLE RESIS	
VR101 VR201, 201 VR203 VR204 VR301 ~ 305 VR401, 402 R247, 490	
RELAY	
RLY601	
LAMP	
PL501 ~ 506	
FUSE	
F1	
SWITCHES	
S1, 3, 4 S2, 5 S6 S7	
RESISTORS	
R101, 102 R103, 104 R105, 106 R107, 108 R109, 110 R111, 112 R113, 114 R115, 116 R117, 118 R119, 120 R121, 122 R123, 124 R125, 126	

■ REPLACEMENT PARTS LIST...Electric Parts

Notes: 1. Part numbers are indicated on must mechanical parts. Please use this part number of parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
3. Bracket indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUIT			
IC101, 201, 305, 306		SVINJM4559DD	IC, Mic Amplifier, Mixing, Equalizer Amplifier & B.P.F.
IC202, 203, 301 ~ 304 401 ~ 403, 405, 406, 501, 502		SVINJM4558DS	IC, Echo Amplifier, Mixing, B.P.F. Ambience Amplifier, Noise Reduction
IC204, 404		MN3008	IC, B.B.D
IC205		MN3101	IC, B.B.D Driver
IC503 ~ 505		AN6875	IC, Dimension Output Level Display
IC701, 702		SVITA7136PM	IC, Equalizer Amplifier
TRANSISTORS			
Q101 ~ 106, 201, 202, 401 ~ 412, 501, 502, 604 ~ 607		2SC1815–Y	Transistor, Buffer, Phase Sifter, Mixing L.P.F. & Muting (Use in ranks Y or O)
Q503 ~ 507		2SA684–RNC	Transistor, Switching
Q601, 603		2SC1983	Transistor, Regulator
Q602		2SA748Q	Transistor, Regulator
DIODES			
D201, 401, 501 ~ 504, 516, 610 ~ 612		**MA162A**	Diode
D301, 402		SVDSLC–22UW5	Light Emitting Diode
D505 ~ 512, 515		LN317GP	Light Emitting Diode
D513, 514		LN417YP	Light Emitting Diode
D518		SVDMZ303A	Diode, 3V Zener
D601, 602, 605 ~ 608		**SVDSR1K2**	Rectifier
D603, 604		SVDMZ316A	Diode, 16V Zener
D609, 614		SVDMZ308C2	Diode, 8V Zener
D613		SVDSLC–26UR5	Light Emitting Diode, Power
TRANSFORMER			
T1	⚠	SLT5L167–W	Transformer, Power Source
VARIABLE RESISTORS			
VR101		EWGGRA090G14	Mixing Control, 10kΩ (G) x 2
VR201, 201		EVHHNA505B54	Mic Level Control, 50kΩ (B)
VR203		EWHHMA505G25	Panpot Control, 200kΩ (G)
VR204		EVHHNA531B14	Echo Control, 10kΩ (B)
VR301 ~ 305		EVB91S20W25S	Frequency Equalizer Control
VR401, 402		EWKF6AS59B14	AMB Control, 10kΩ, (B)
R247, 490		**EVTS3MA00B14**	Adjustment, 100kΩ, (B)
RELAY			
RLY601		SSY9	Relay
LAMP			
PL501 ~ 506		XAMR81S10	Lamp (0.15A, 8V)
FUSE			
F1	⚠	XBA2C10TR0	Fuse, Power Source (1A, 250V)
SWITCHES			
S1, 3, 4		SSH3001	Switch, Equalizer, Dimension, Position
S2, 5		SSH97	Switch, Selector, Tape Monitor
S6	⚠	ESB90117S	Switch, Power Source
S7	⚠	ESE372	Switch, Voltage Adjuster
RESISTORS			
R101, 102		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R103. 104		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R105, 106		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R107, 108		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R109, 110		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R111, 112		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R113, 114		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R115, 116		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R117, 118		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R119, 120		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R121, 122		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R123, 124		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R125, 126		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R127, 128		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R129, 130		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R131, 132		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R133, 134		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R135, 136		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R137, 138		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R139 140		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R141, 142		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R143, 144		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R145, 146		**ERD25TJ474**	Carbon, 470kΩ, 1/4W, ± 5%
R147, 148		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R151		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R161, 162		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R163, 164		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R165, 166		**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 5%
R167, 168		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R169, 170		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R201, 202		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R203		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R204		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R205		**ERD25TJ154**	Carbon, 150kΩ, 1/4W, ± 5%
R206		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R207		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R208		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R209		**ERD25FJ680**	Carbon, 68Ω, 1/4W, ± 5%
R210, 211		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R212		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R213		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R214		**ERD25TJ154**	Carbon, 150kΩ, 1/4W, ± 5%
R215		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R216		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R217		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R218		**ERD25FJ680**	Carbon, 68Ω, 1/4W, ± 5%
R219, 220		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R221, 222		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R223, 224		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R225, 226		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R227, 228		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R229, 230		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R231		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R232		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R233		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R234		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R235		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R236		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R237		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R238		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R239, 240		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R241, 242		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R243, 244		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R245		**ERD25FJ182**	Carbon, 1.8kΩ, 1/4W, ± 5%
R246	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R248		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R249	⚠	**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R301, 302		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R303, 304		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R305, 306		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R307, 308		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R309, 310	⚠	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
R311, 312		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R313, 314		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R315, 316		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R317, 318		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R319, 320		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R321, 322		**ERD25FJ121**	Carbon, 120Ω, 1/4W, ± 5%
R323, 324		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R325, 326		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R327, 328		**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
R329, 330		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R331, 332		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R333, 334		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R335, 336		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R337, 338		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R339, 340		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R341		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R401, 402		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R403, 404		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R405, 406		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R407, 408		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R409, 410		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R411, 412		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R413, 414		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R415, 416		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R417, 418		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R419, 420		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R421, 422		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R423, 424		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R425, 426		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R427, 428		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R429, 430		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R431, 432		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R433, 434		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R435, 436		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R437, 438		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R439, 440		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R441, 442		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R443, 444		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R445, 446		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R447, 448		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R449, 450		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R451, 452		**ERD25FJ182**	Carbon, 1.8kΩ, 1/4W, ± 5%
R453, 454		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R455		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R456		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R457, 458		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R459		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R460		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R461		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R462, 463		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R464, 465		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R466, 467		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R468		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R469, 470		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R471		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R472		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R473		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R474		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R475		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R476		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R477		**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R478		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R479		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R480		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R481		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R482		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R483, 484		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R485		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R486		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R487, 488		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R489		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R491		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R492, 493	⚠	**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R494	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R495		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R496		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R501, 502		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R503, 504		**ERD25TJ274**	Carbon, 270kΩ, 1/4W, ± 5%
R505, 506		**ERC14GK335**	Solid, 3.3MΩ, 1/4W, ±10%
R507, 508		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R509, 510		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R511, 512		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R513, 514		**ERD25TJ564**	Carbon, 560kΩ, 1/4W, ± 5%
R515, 516		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R517		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R518		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R520		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R521		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R522		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R523		**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R524, 525	⚠	**ERG1ANJ390**	Metal Oxide, 39Ω, 1W, ± 5%
R526, 527	⚠	**ERG1ANJ390**	Metal Oxide, 39Ω, 1W, ± 5%
R528		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R531	⚠	**ERG2ANJ680**	Metal Oxide, 68Ω, 2W, ± 5%
R601, 602	⚠	**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R603	⚠	**ERD25FJ3R9**	Carbon, 3.9Ω, 1/4W, ± 5%
R604, 605	⚠	**ERD25FJ471**	Carbon, 470Ω, 1/4W,
R606	⚠	**ERD25FJ3R9**	Carbon, 3.9Ω, 1/4W,
R607	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W,
R608	⚠	**ERD25FJ3R9**	Carbon, 3.9Ω, 1/4W,
R609		**ERD25FJ103**	Carbon, 10kΩ, 1/4W,
R610		**ERD25TJ183**	Carbon, 18kΩ, 1/4W,
R611		**ERD25TJ564**	Carbon, 560kΩ, 1/4W,
R612		**ERD25FJ561**	Carbon, 560Ω, 1/4W,
R613		**ERD25FJ821**	Carbon, 820Ω, 1/4W,
R614		**ERD25TJ123**	Carbon, 12kΩ, 1/4W,
R615		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W,
R701, 702		**ERD25TJ104**	Carbon, 100kΩ, 1/4W,
R703, 704		**ERD25FJ331**	Carbon, 330Ω, 1/4W,
R705, 706		**ERD25TJ104**	Carbon, 100kΩ, 1/4W,
R707, 708		**ERD25FJ101**	Carbon, 100Ω, 1/4W,
R709, 710		**ERD25FJ331**	Carbon, 330Ω, 1/4W,
R711, 712		**ERO25CKF1502**	Metal Film, 15kΩ, 1/4W,
R713, 714		**ERO25CKF2053**	Metal Film, 205kΩ, 1/4W,
R715, 716		**ERD25FJ103**	Carbon, 10kΩ, 1/4W,
R717, 718		**ERD25TJ224**	Carbon, 220kΩ, 1/4W,
R719, 720		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W,
R721, 722		**ERD25FJ101**	Carbon, 100Ω, 1/4W,
CAPACITORS			
C1	⚠	ECKDKC103PF	Polyester, 0.01μF, 400VAC,
C101, 102		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C103, 104		ECKD1H681KB	Ceramic, 680pF, 50V,
C105, 106		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C107, 108		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C109, 110		ECKD1H681KB	Ceramic, 680pF, 50V,
C111, 112		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C113, 114		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C115, 116		ECKD1H681KB	Ceramic, 680pF, 50V
C117, 118		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C119, 120		ECCD1H101K	Ceramic, 100pF, 50V,
C121, 122	⚠	ECEA1CN330S	Non-Polar Electrolytic, 33μF
C123		**ECEA1ES101**	Electrolytic, 100μF, 25V
C124		**ECEA1HS100**	Electrolytic, 10μF, 50V
C125, 126	⚠	ECEA1HN3R3S	Non-Polar Electrolytic, 3.3μF,
C201		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V
C202		ECKD1H821KB	Ceramic, 820pF, 50V,
C203		ECCD1H220K	Ceramic, 22pF, 50V,
C204		ECCD1H100K	Ceramic, 10pF, 50V,
C205	⚠	ECEA1CN100S	Non-Polar Electrolytic, 10μF,
C206		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C207		ECCD1H221K	Ceramic, 220pF, 50V,
C208		**ECEA50ZR33**	Electrolytic, 0.33μF, 50V
C209		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V
C210		ECKD1H821KB	Ceramic, 820pF, 50V,
C211		ECCD1H220K	Ceramic, 22pF, 50V,
C212		ECCD1H100K	Ceramic, 10pF, 50V,
C213	⚠	ECEA1CN100S	Non-Polar Electrolytic, 10μF,
C214		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C215		ECCD1H221K	Ceramic, 220pF, 50V,
C216		**ECEA50ZR33**	Electrolytic, 0.33μF, 50V
C217, 218		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C219, 220		ECCD1H100K	Ceramic, 10pF, 50V,
C221, 222		ECEA1CN100S	Non-Polar Electrolytic, 10μF,
C223		**ECEA1HS100**	Electrolytic, 10μF, 50V
C224		ECKD1H391KB	Ceramic, 390pF, 50V,
C225		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C226		ECQM1H473JZ	Polyester, 0.047μF, 50V,
C227		ECQM1H472JZ	Polyester, 0.0047μF, 50V,
C228		ECQS1471JZ	Polyestyrene, 470pF, 50V,
C229		ECQM1H472JZ	Polyester, 0.0047μF, 50V,
C230		ECQM1H122JZ	Polyester, 0.0012μF, 50V,
C231		ECQM1H223JZ	Polyester, 0.022μF, 50V,
C232		ECQM1H683JZ	Polyester, 0.068μF, 50V,
C233		ECQM1H102JZ	Polyester, 0.001μF, 50V,
C234		ECQM1H473JZ	Polyester, 0.047μF, 50V,
C235		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C236		**ECEA1CS221**	Electrolytic, 220μF, 16V
C237, 238		**ECEA1HS100**	Electrolytic, 10μF, 50V
C239		**ECEA1HS100**	Electrolytic, 10μF, 50V,
C240		**ECEA1CS221**	Electrolytic, 220μF, 16V
C301, 302		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C303, 304		**ECEA1AS470**	Electrolytic, 47μF, 10V
C305, 306		**ECEA1AS470**	Electrolytic, 47μF, 10V

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3. Bracket indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Ref. No.		Part No.	Part Name & Description
27, 128		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
29, 130		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
31, 132		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
33, 134		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
35, 136		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
37, 138		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
39, 140		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
41, 142		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
43, 144		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
45, 146		**ERD25TJ474**	Carbon, 470kΩ, 1/4W, ± 5%
47, 148		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
51		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
61, 162		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
63, 164		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
65, 166		**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 5%
67, 168		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
69, 170		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
201, 202		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
203		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
204		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
205		**ERD25TJ154**	Carbon, 150kΩ, 1/4W, ± 5%
206		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
207		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
208		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
209		**ERD25FJ680**	Carbon, 68Ω, 1/4W, ± 5%
210, 211		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
212		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
213		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
214		**ERD25TJ154**	Carbon, 150kΩ, 1/4W, ± 5%
215		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
216		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
217		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
218		**ERD25FJ680**	Carbon, 68Ω, 1/4W, ± 5%
219, 220		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
221, 222		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
223, 224		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
225, 226		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
227, 228		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
229, 230		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
231		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
232		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
233		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
234		**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
235		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
236		**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
237		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
238		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
239, 240		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
241, 242		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
243, 244		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
245		**ERD25FJ182**	Carbon, 1.8kΩ, 1/4W, ± 5%
246	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
248		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
249	⚠	**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
301, 302		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
303, 304		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
305, 306		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
307, 308		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
309, 310	⚠	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
311, 312		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
313, 314		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
315, 316		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
317, 318		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
319, 320		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
321, 322		**ERD25FJ121**	Carbon, 120Ω, 1/4W, ± 5%
323, 324		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
325, 326		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
327, 328		**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
329, 330		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
331, 332		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
333, 334		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
335, 336		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
337, 338		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
339, 340		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
341		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
401, 402		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%

Ref. No.		Part No.	Part Name & Description
R403, 404		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R405, 406		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R407, 408		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R409, 410		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R411, 412		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R413, 414		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R415, 416		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R417, 418		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R419, 420		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R421, 422		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R423, 424		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R425, 426		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R427, 428		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R429, 430		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R431, 432		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R433, 434		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R435, 436		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R437, 438		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R439, 440		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R441, 442		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R443, 444		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R445, 446		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R447, 448		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R449, 450		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R451, 452		**ERD25FJ182**	Carbon, 1.8kΩ, 1/4W, ± 5%
R453, 454		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R455		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R456		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R457, 458		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R459		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R460		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R461		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R462, 463		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R464, 465		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R466, 467		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R468		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R469, 470		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R471		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R472		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R473		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R474		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R475		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R476		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R477		**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R478		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R479		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R480		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R481		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R482		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R483, 484		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R485		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R486		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R487, 488		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R489		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R491		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R492, 493	⚠	**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R494	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R495		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R496		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R501, 502		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R503, 504		**ERD25TJ274**	Carbon, 270kΩ, 1/4W, ± 5%
R505, 506		**ERC14GK335**	Solid, 3.3MΩ, 1/4W, ±10%
R507, 508		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R509, 510		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R511, 512		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R513, 514		**ERD25TJ564**	Carbon, 560kΩ, 1/4W, ± 5%
R515, 516		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R517		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R518		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R520		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R521		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R522		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R523		**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R524, 525	⚠	**ERG1ANJ390**	Metal Oxide, 39Ω, 1W, ± 5%
R526, 527	⚠	**ERG1ANJ390**	Metal Oxide, 39Ω, 1W, ± 5%
R528		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R531	⚠	**ERG2ANJ680**	Metal Oxide, 68Ω, 2W, ± 5%
R601, 602	⚠	**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R603	⚠	**ERD25FJ3R9**	Carbon, 3.9Ω, 1/4W, ± 5%

Ref. No.		Part No.	Part Name & Description
R604, 605	⚠	**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R606	⚠	**ERD25FJ3R9**	Carbon, 3.9Ω, 1/4W, ± 5%
R607	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R608	⚠	**ERD25FJ3R9**	Carbon, 3.9Ω, 1/4W, ± 5%
R609		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R610		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R611		**ERD25TJ564**	Carbon, 560kΩ, 1/4W, ± 5%
R612		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R613		**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R614		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R615		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R701, 702		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R703, 704		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R705, 706		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R707, 708		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R709, 710		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R711, 712		**ERO25CKF1502**	Metal Film, 15kΩ, 1/4W, ± 1%
R713, 714		**ERO25CKF2053**	Metal Film, 205kΩ, 1/4W, ± 1%
R715, 716		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R717, 718		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R719, 720		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R721, 722		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%

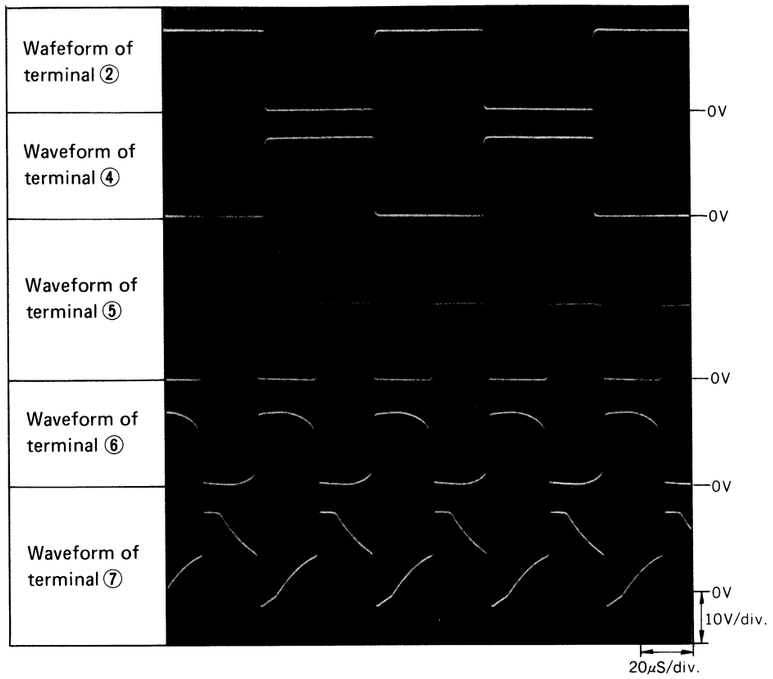
CAPACITORS

C1	⚠	ECKDKC103PF	Polyester, 0.01μF, 400VAC, ± 10%
C101, 102		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C103, 104		ECKD1H681KB	Ceramic, 680pF, 50V, ± 10%
C105, 106		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C107, 108		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C109, 110		ECKD1H681KB	Ceramic, 680pF, 50V, ± 10%
C111, 112		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C113, 114		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C115, 116		ECKD1H681KB	Ceramic, 680pF, 50V ± 10%
C117, 118		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C119, 120		ECCD1H101K	Ceramic, 100pF, 50V, ± 10%
C121, 122	⚠	ECEA1CN330S	Non-Polar Electrolytic, 33μF, 16V
C123		**ECEA1ES101**	Electrolytic, 100μF, 25V
C124		**ECEA1HS100**	Electrolytic, 10μF, 50V
C125, 126	⚠	ECEA1HN3R3S	Non-Polar Electrolytic, 3.3μF, 50V
C201		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V
C202		ECKD1H821KB	Ceramic, 820pF, 50V, ± 10%
C203		ECCD1H220K	Ceramic, 22pF, 50V, ± 10%
C204		ECCD1H100K	Ceramic, 10pF, 50V, ± 10%
C205	⚠	ECEA1CN100S	Non-Polar Electrolytic, 10μF, 16V
C206		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C207		ECCD1H221K	Ceramic, 220pF, 50V, ± 10%
C208		**ECEA50ZR33**	Electrolytic, 0.33μF, 50V
C209		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V
C210		ECKD1H821KB	Ceramic, 820pF, 50V, ± 10%
C211		ECCD1H220K	Ceramic, 22pF, 50V, ± 10%
C212		ECCD1H100K	Ceramic, 10pF, 50V, ± 10%
C213	⚠	ECEA1CN100S	Non-Polar Electrolytic, 10μF, 16V
C214		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C215		ECCD1H221K	Ceramic, 220pF, 50V, ± 10%
C216		**ECEA50ZR33**	Electrolytic, 0.33μF, 50V
C217, 218		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C219, 220		ECCD1H100K	Ceramic, 10pF, 50V, ± 10%
C221, 222		ECEA1CN100S	Non-Polar Electrolytic, 10μF, 16V
C223		**ECEA1HS100**	Electrolytic, 10μF, 50V
C224		ECKD1H391KB	Ceramic, 390pF, 50V, ± 10%
C225		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C226		ECQM1H473JZ	Polyester, 0.047μF, 50V, ± 5%
C227		ECQM1H472JZ	Polyester, 0.0047μF, 50V, ± 5%
C228		ECQS1471JZ	Polyestyrene, 470pF, 50V, ± 5%
C229		ECQM1H472JZ	Polyester, 0.0047μF, 50V, ± 5%
C230		ECQM1H122JZ	Polyester, 0.0012μF, 50V, ± 5%
C231		ECQM1H223JZ	Polyester, 0.022μF, 50V, ± 5%
C232		ECQM1H683JZ	Polyester, 0.068μF, 50V, ± 5%
C233		ECQM1H102JZ	Polyester, 0.001μF, 50V, ± 5%
C234		ECQM1H473JZ	Polyester, 0.047μF, 50V, ± 5%
C235		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C236		**ECEA1CS221**	Electrolytic, 220μF, 16V
C237, 238		**ECEA1HS100**	Electrolytic, 10μF, 50V
C239		**ECEA1HS100**	Electrolytic, 10μF, 50V,
C240		**ECEA1CS221**	Electrolytic, 220μF, 16V
C301, 302		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C303, 304		**ECEA1AS470**	Electrolytic, 47μF, 10V
C305, 306		**ECEA1AS470**	Electrolytic, 47μF, 10V

Ref. No.		Part No.	Part Name & Description
C307, 308		ECCD1H181K	Ceramic, 180pF, 50V, ± 10%
C309, 310		ECEA1CN330S	Non-Polar Electrolytic, 33μF, 16V
C311, 312		**ECEA50Z1**	Electrolytic, 1μF, 50V
C313, 314		**ECEA50ZR22**	Electrolytic, 0.22μF, 50V
C315, 316		**ECEA1HS100**	Electrolytic, 10μF, 50V
C317, 318		**ECEA1HS100**	Electrolytic, 10μF, 50V
C319, 320		**ECEA50ZR33**	Electrolytic, 0.33μF, 50V
C321, 322		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C323, 324		**ECEA50Z1**	Electrolytic, 1μF, 50V
C325, 326		**ECEA50Z1**	Electrolytic, 1μF, 50V
C327, 328		ECQM1H223JZ	Polyester, 0.022μF, 50V, ± 5%
C329, 330		**ECEA50ZR33**	Electrolytic, 0.33μF, 50V
C331, 332		ECQM1H682JZ	Polyester, 0.0068μF, 50V, ± 5%
C333, 334		ECQM1H683JZ	Polyester, 0.068μF, 50V, ± 5%
C335, 336		**ECEA1HS100**	Electrolytic, 10μF, 50V
C401, 402		**ECEA50ZR47**	Electrolytic, 0.47μF, 50V
C403, 404		ECQM1H183JZ	Polyester, 0.018μF, 50V, ± 5%
C405, 406		ECQM1H563JZ	Polyester, 0.056μF, 50V, ± 5%
C407, 408		ECQM1H472JZ	Polyester, 0.0047μF, 50V, ± 5%
C409, 410		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C411, 412		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C413, 414	⚠	ECEA1CN100S	Non-Polar Electrolytic, 10μF, 16V
C415		ECQM1H473JZ	Polyester, 0.047μF, 50V, ± 5%
C416		ECQM1H393JZ	Polyester, 0.039μF, 50V, ± 5%
C417		**ECEA1CS330**	Electrolytic, 33μF, 16V
C418		ECQM1H822JZ	Polyester, 0.0082μF, 50V, ± 5%
C419		ECKD1H561KB	Ceramic, 560pF, 50V, ± 10%
C420		ECQM1H822JZ	Polyester, 0.0082μF, 50V, ± 5%
C421		ECKD1H561KB	Ceramic, 560pF, 50V, ± 10%
C422		ECQM1H562JZ	Polyester, 0.0056μF, 50V, ± 5%
C423		ECQM1H472JZ	Polyester, 0.0047μF, 50V, ± 5%
C424		ECQM1H822JZ	Polyester, 0.0082μF, 50V, ± 5%
C425		ECQM1H392JZ	Polyester, 0.0039μF, 50V, ± 5%
C426		ECQM1H822JZ	Polyester, 0.0082μF, 50V, ± 5%
C427		ECQM1H332JZ	Polyester, 0.0033μF, 50V, ± 5%
C428		**ECEA50ZR15**	Electrolytic, 0.15μF, 50V
C429		ECQM1H154KZ	Polyester, 0.15μF, 50V, ± 10%
C430	⚠	ECEA1HN3R3S	Non-Polar Electrolytic, 3.3μF, 50V
C431		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C432		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C433		**ECEA50ZR15**	Electrolytic, 0.15μF, 50V
C434		ECQM1H393JZ	Polyester, 0.039μF, 50V, ± 5%
C435, 436		**ECEA1CS221**	Electrolytic, 220μF, 16V
C437		**ECEA1ES470**	Electrolytic, 47μF, 25V
C438, 439		**ECEA1HS100**	Electrolytic, 10μF, 50V
C440		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C501, 502		**ECEA50Z1**	Electrolytic, 1μF, 50V
C503, 504		**ECEA50ZR68**	Electrolytic, 0.68μF, 50V
C505, 506		**ECEA50Z1**	Electrolytic, 1μF, 50V
C507		**ECEA50ZR68**	Electrolytic, 0.68μF, 50V
C508, 509		**ECEA1HS100**	Electrolytic, 10μF, 50V
C510, 511		**ECEA1HS100**	Electrolytic, 10μF, 50V
C512, 513		**ECEA1HS100**	Electrolytic, 10μF, 50V
C514, 515		ECKD1H103MD	Ceramic, 0.01μF, 50V, ± 20%
C516		ECKD1H102MD	Ceramic, 0.001μF, 50V, ± 20%
C517		**ECEA1HS100**	Electrolytic, 10μF, 50V
C601		**ECEA1ES222**	Electrolytic, 2200μF, 25V
C602, 603		**ECEA1ES221**	Electrolytic, 220μF, 25V
C604		**ECEA1ES222**	Electrolytic, 2200μF, 25V
C605, 606		**ECEA1ES221**	Electrolytic, 220μF, 25V
C607		**ECEA1ES332**	Electrolytic, 3300μF, 25V
C608		**ECEA1CS330**	Electrolytic, 33μF, 16V
C609		**ECEA50Z2R2**	Electrolytic, 2.2μF, 50V
C610		**ECEA1AS101**	Electrolytic, 100μF, 10V
C611, 612		ECKD2H103PE	Ceramic, 0.01μF, 500V,
C613, 614		ECKD2H103PE	Ceramic, 0.01μF, 500V,
C615		**ECEA1ES470**	Electrolytic, 47μF, 25V
C701, 702		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V
C703, 704		ECCD1H470K	Ceramic, 47pF, 50V, ± 10%
C705, 706		ECKD1H331KB	Ceramic, 330pF, 50V, ± 10%
C707, 708		ECKD1H681KB	Ceramic, 680pF, 50V, ± 10%
C709, 710		**ECEA1CS330**	Electrolytic, 33μF, 16V
C711, 712		ECKD1H390KB	Ceramic, 390pF, 50V, ± 10%
C713, 714		ECQM1H472JZ	Polyester, 0.0047μF, 50V, ± 5%
C715, 716		ECQM1H183JZ	Polyester, 0.018μF, 50V, ± 5%
C717, 718		ECCD1H330K	Ceramic, 33pF, 50V, ± 10%
C719, 720	⚠	ECEA1HN010S	Non-Polar Electrolytic, 1μF, 50V
C721, 722		ECKD1H681KB	Ceramic, 680pF, 50V, ± 10%
C723, 724		**ECEA1ES101**	Electrolytic, 100μF, 25V

■ WAVEFORM

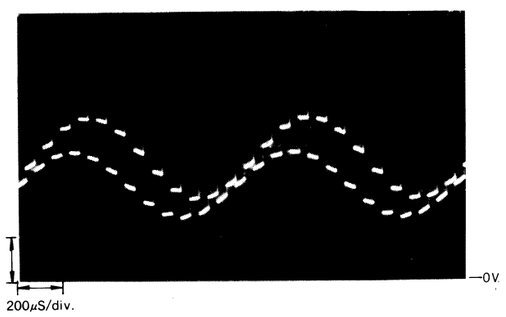
• Waveform of each terminal of IC205 (MN3101)

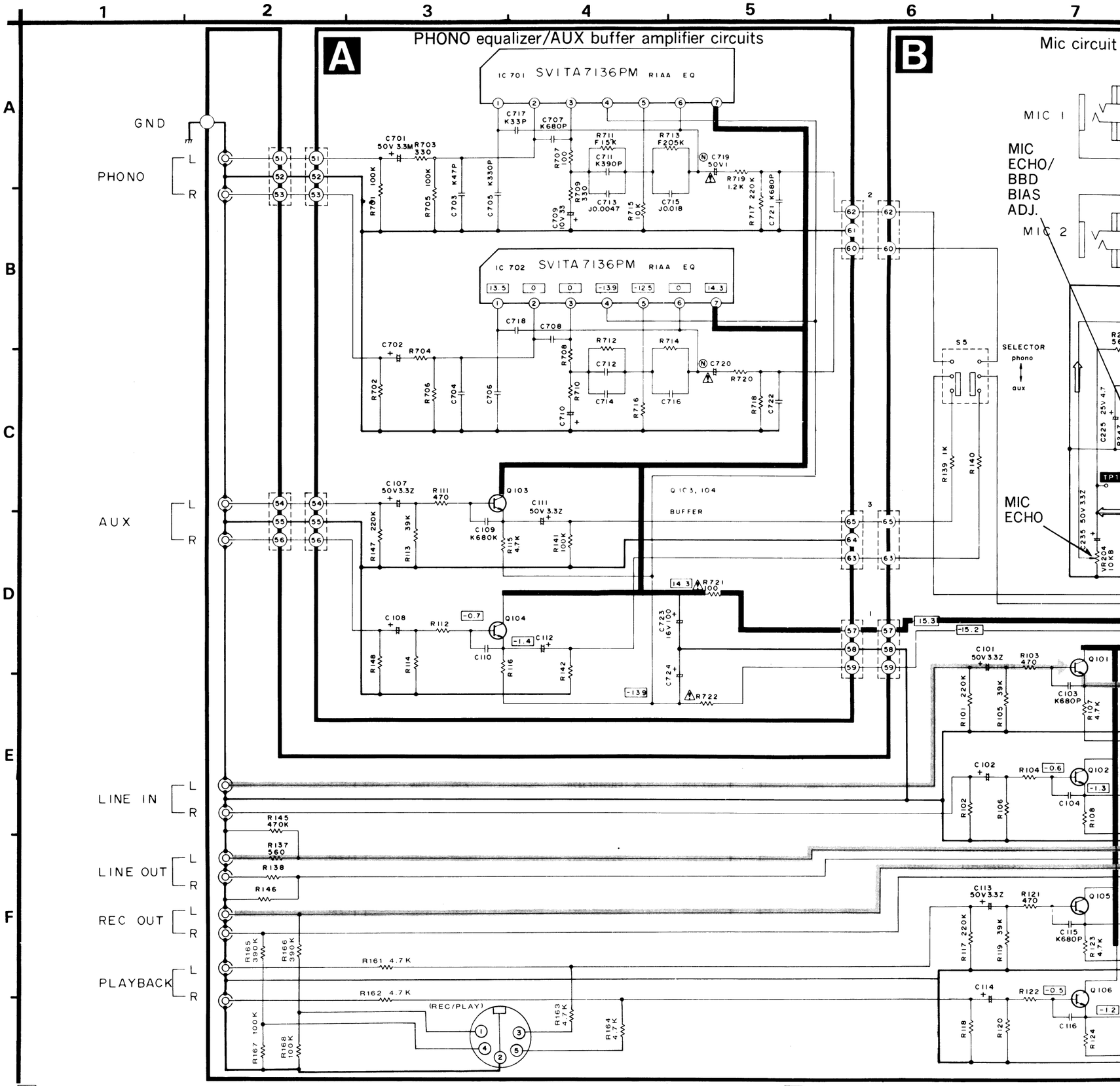


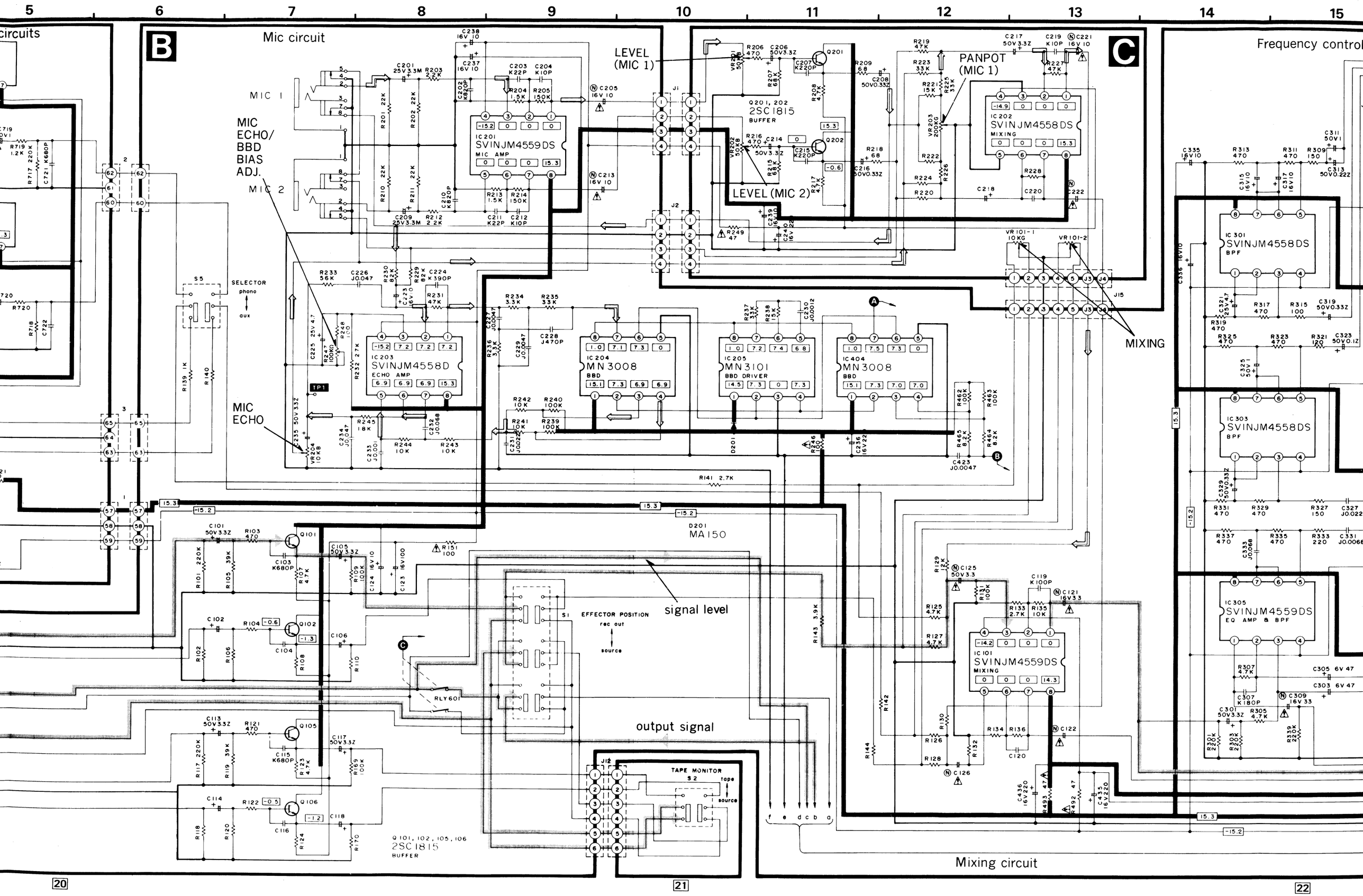
• Waveform of terminals 3 and 4 of IC204, 404 (MN3008)

(No input signal)

(Input signal (1 kHz)






5
6
7
8
9
10
11
12
13
14
15
B
C
Mic circuit
MIC 1
MIC ECHO/ BBD BIAS ADJ.
MIC 2
LEVEL (MIC 1)
LEVEL (MIC 2)
PANPOT (MIC 1)
IC201 SVINJM4559DS MIC AMP
IC202 SVINJM4558DS MIXING
IC203 SVINJM4558D ECHO AMP
IC204 MN3008 BBD
IC205 MN3101 BBD DRIVER
IC404 MN3008 BBD
Q201, 202 2SC1815 BUFFER
D201 MA150
SELECTOR phono aux
MIC ECHO
MIXING
Frequency control
IC301 SVINJM4558DS BPF
IC303 SVINJM4558DS BPF
IC305 SVINJM4559DS EQ AMP & BPF
IC101 SVINJM4559DS MIXING
Q101, 102, 105, 106 2SC1815 BUFFER
EFFECTOR POSITION rec out source
signal level
output signal
TAPE MONITOR S2 tape source
RLY601
Mixing circuit
20
21
22

C

D

LEVEL (MIC 1)

LEVEL (MIC 2)

PANPOT (MIC 1)

Q201, 202 2SC1815 BUFFER

IC 202 SVINJM4558DS MIXING

IC 204 MN3008 BBD

IC 205 MN3101 BBD DRIVER

IC 404 MN3008 BBD

MIXING

Frequency control circuit

IC 301 SVINJM4558DS BPF

IC 302 SVINJM4558DS BPF

IC 303 SVINJM4558DS BPF

IC 304 SVINJM4558DS BPF

IC 305 SVINJM4559DS EQ AMP & BPF

IC 306 SVINJM4559DS EQ AMP & BPF

IC 101 SVINJM4559DS MIXING

VR301-1 200KW 60Hz

VR302-1 200KW 250Hz

VR303-1 200KW 1kHz

VR304-1 200KW 4kHz

VR305-1 200KW 16kHz

VR301-2 60Hz

VR302-2 250Hz

VR303-2 1kHz

VR304-2 4kHz

VR305-2 16kHz

D201 MA150

signal level

EFFECTOR POSITION rec out / source

TAPE MONITOR S2 tape / source

output signal

EQUALIZER S3 on / off

Mixing circuit

21

22

Dimension control circuit

Q401, 402 2SC1815 PHASE SIFTER

Q403, 404 2SC1815 BUFFER

Q405, 406 2SC1815 MIXING

IC401 SVINJM4558DS AMBIENCE AMP

IC402 SVINJM4558DS AMBIENCE AMP

IC403 SVINJM4558D ECHO AMP

IC405 SVINJM4558D NOIS REDUCTION

IC406 SVINJM4558DS PHASE SHIFTER

Q407~410 2SC1815 LPF

Q411, 412 2SC1815 MUTING

D301, 402 SVDSLC-22UW5

D401 MA150

D501~504, 516 MA150

D518 SVDMZ303A

Q503~507 2SA684 SWITCHING

IC505 AN6875 DIMENSION DISPLAY

AMBIENCE

DIMENSION ECHO

DIMENSION ECHO/ BBD BIAS ADJ.

DIMENSION INDICATOR

EQUALIZER INDICATOR

Output

12 11 10 9 8 7 6 5 4 3

Output level/Dimension indicator circuits

DIMENSION INDICATOR D402 — EQUALIZER INDICATOR D301

D301, 402
SVDSLC-22UW5

J10

8V (150mA) PL504 PL502 PL506 DIMENSION LAMP — J4

8V (150mA) PL505 PL503 PL501 DIMENSION LAMP — J1

PEAK LEVEL INDICATOR
+5 0 -5 -10 -15 | -15 -10 -5 0 +5
D513 D511 D509 D507 D505 D515 D506 D508 D510 D512 D514 — J2 J3

D505~512, 515
LN317GP
-15~0dB INDICATOR

D513, 514
LN417YP
+5dB INDICATOR

D613
SVDSLC-22UR5
POWER INDICATOR

S4 DIMENSION on / off

R495 1.2K — R531 2W 68

C514 M0.01 — C515 M0.01

R523 820 — R613 820

E

IC505 AN6875 DIMENSION DISPLAY
C508 16V10 — Q503
C509 16V10 — Q504
C510 16V10 — Q505
C511 16V10 — Q506
C512 16V10 — Q507
C516 M0.001
R524 1W 39 — R525 1W 39 — R526 1W 39 — R527 1W 39
R522 1K

IC503 AN6875 OUTPUT LEVEL DISPLAY
Q501, 502
2SC1815
BUFFER
R509 3.3K
Q501

IC504 AN6875 OUTPUT LEVEL DISPLAY
R510
Q502

Q503~507
2SA684
SWITCHING

D501~504, 516
MA150

D518
SVDMZ303A

R521 18K — R518 2.7K — R520 56K — D517 — R528 1K

IC502
SVINJM4558D
AMP & DETECT

R501 27K — C501 50V1 — R505 3.3M — D501 — D503

IC501
SVINJM4558D
AMP & DETECT

R503 270K — R507 820K — C503 50V0.68Z — R508 — C504

R512 82K — C506 50V1 — R511 82K — C505 50V1
R513 560K — D516 — R516 10K — R517 10K — C507 50V0.68Z
R514 560K — R515 10K
R502 — C502 — R506 — R504

D502 — D504

C513 16V10 — C514 16V10

D601, 602, 605~608
SVDSRIK2
RECTIFIER

Q603
R608 3.9 — R607 100 — C607 16V3300
D609 — C608 10V33
D607 — D605 — C613 P0.01
D608 — D606 — C614 P0.01
C615 16V47

Q601, 603
2SC1983
REGULATOR

SUP 20372F
F2 T1A — F1 T1A

D609, 614
SVDMZ308C2

D603, 604
SVDMZ316A

Q601
R603 3.9 — R602 470 — R601 470
D603 — D602 — C601 25V2200
C603 25V220 — C602 25V220 — C611 P0.01
C606 25V220 — D604 — C605 25V220
R606 3.9 — R605 470 — R604 470
C604 25V2200 — C612 P0.01
Q602 — D602

D610
C609 50V2.2Z
RLY601 — D612
R610 18K — R609 10K
D614 — R614 12K — R612 560 — R611 560K
Q607 — Q605 — Q604 — Q606
R615 8.2K — C610 6V100 — D611

Q602
2SA748
REGULATOR

Q604~607
2SC1815
RELAY DRIVE

D610~612
MA150

DIMENSION ECHO

Q411, 412
2SC1815
MUTING

D401
MA150

JM4558D

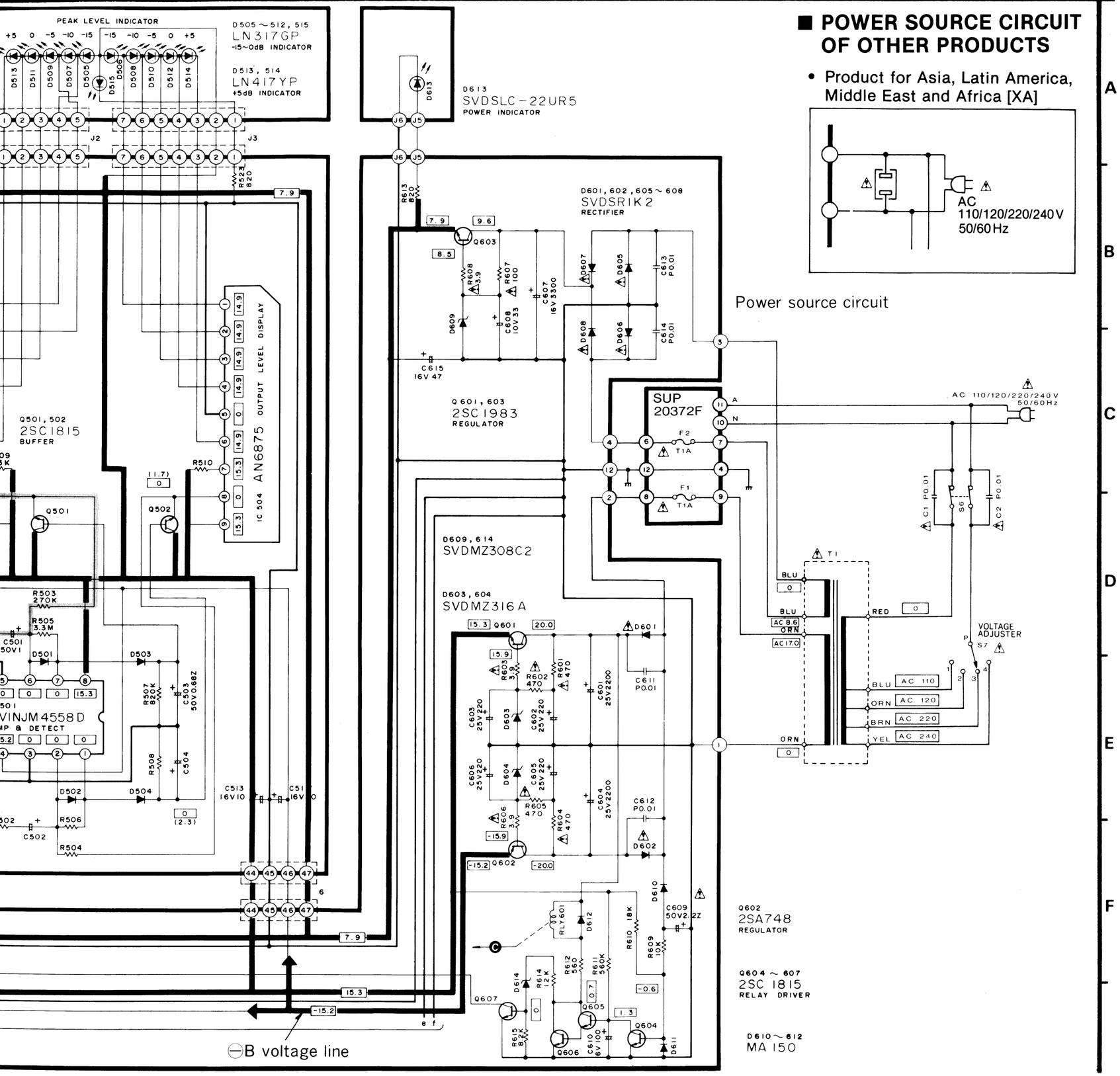
⊖B voltage line

22 23

■ POWER SOURCE CIRCUIT OF OTHER PRODUCTS

- Product for Asia, Latin America, Middle East and Africa [XA]

Power source circuit



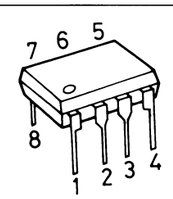
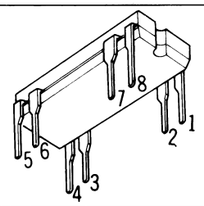
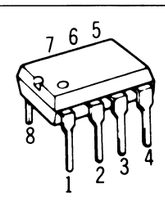
■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

1. **S1** : Effector position switch in "**source**" position. ■ (source), ▬ (rec out)
2. **S2** : Tape monitor switch in "**source**" position. ■ (source), ▬ (tape)
3. **S3** : Equalizer switch in "**off**" position. ■ (off), ▬ (on)
4. **S4** : Dimension switch in "**off**" position. ■ (off), ▬ (on)
5. **S5** : Selector switch in "**aux**" position. ■ (aux) ▬ (phono)
6. **S6** : Power switch in "**on**" position.
7. **S7** : Voltage adjuster switch in "**220V**" position. 110V◄►120V◄►220V◄►240V
8. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
   * Figures in ▭ stand for DC voltage in non signal.
   * Figures in ( ) stand for DC voltage in 1kHz·150mV at line output both channel.
   * Figures in 〈 〉 stand for DC voltage in 1kHz·150mV at line output L channel (dimension switch in "**on**" position, ambience control volume in "**max**").
9. Signal line
   ∿∿ Audio frequency (Lch) ▬ ⊕ B voltage line
   ⇨ Mic signal
10. ⚠ indicates that only parts specified by the manufacturer be used for safety.

• Terminal guide of transistors and IC's

SVINJM4559, SVINJM4558	MN3008	MN3101
		
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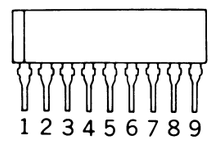	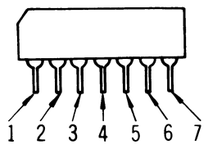	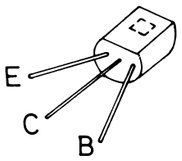
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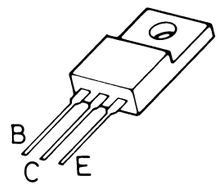
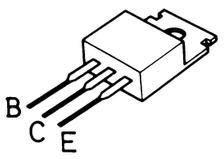
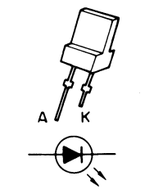
		

■ REPLACEMENT PARTS LIST
(Cabinet and Chassis Parts)

Notes: 1. Parts numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
3. [K]-marked parts are used for black type only, while O-marked parts are for silver type only.
4. Parts other than [K]- and O-marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Black type model No. SH-8030 (K)

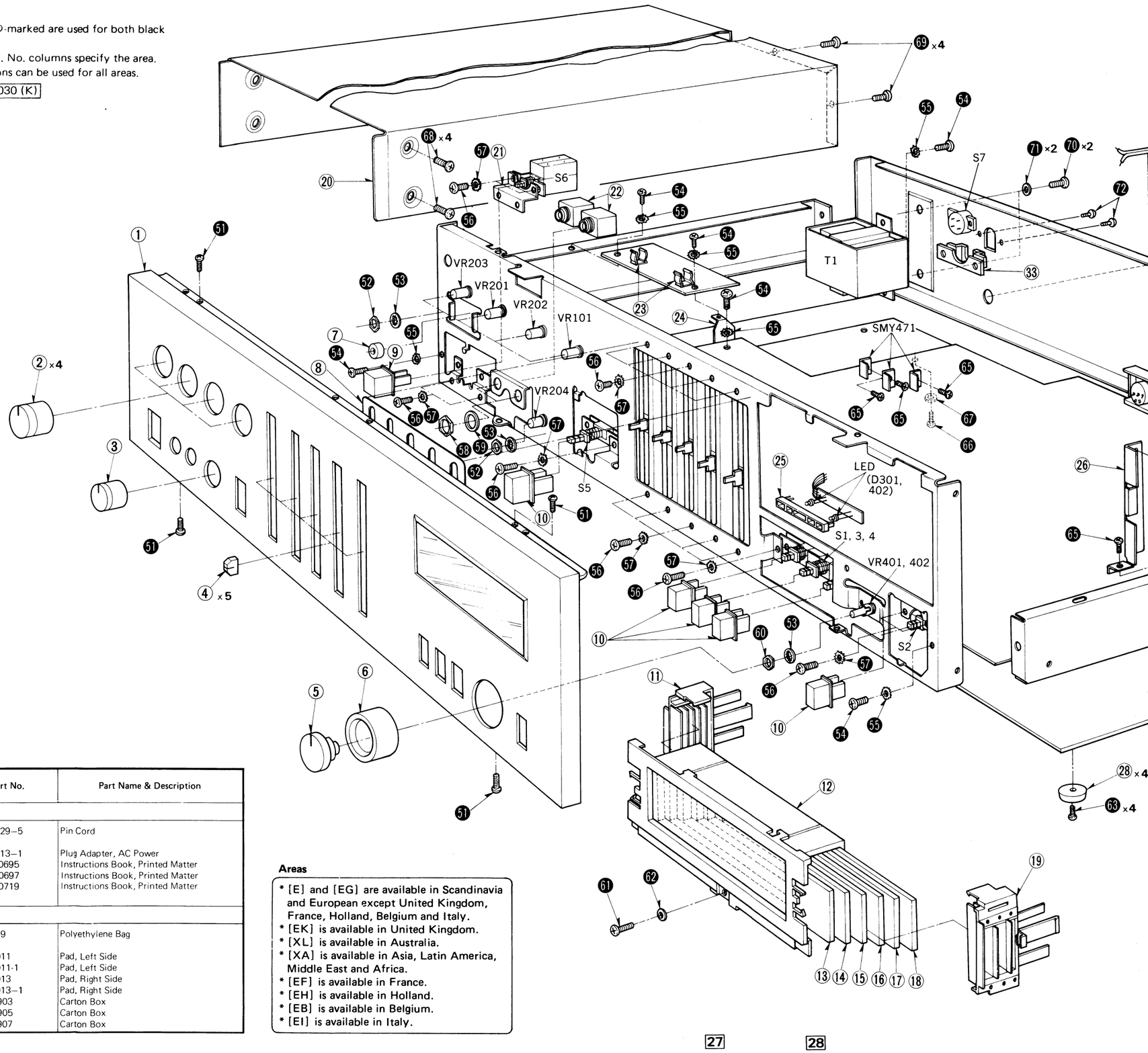
Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1	O	SYW353	Front Panel
1	K	SYW353–1	Front Panel (Black)
2		SBN983	Knob, Panport, Mic, Mixing
3		SBN985	Knob, Echo
4		SBC333	Button, Frequency Equalizer
5		SBN987	Knob, Dimension Control
6		SBN989	Knob, Dimension Control
7		SHG1579	Spacer, Power L.E.D.
8		SHS1041	Felt
9		SBC337	Button, Power
10		SBC339	Button, Push Switch
11		SGXH8030N	Reflector Plate
12		SGX6941	Case, Dimension Control
13		SDL27	Panel, Dimension
14		SDL29	Panel, Dimension
15		SDL31	Panel, Dimension
16		SDL33	Panel, Dimension
17		SDL35	Panel, Dimension
18		SDL37	Panel, Dimension
19		SGXH8030N1	Reflector Plate
20	O	SKC610S1	Cabinet Cover
20	K	SKC610B1	Cabinet Cover (Black)
21		SUW1745	Bracket, Power Switch
22		XCJS6P21E–A	Jack, Headphone
23		SJT347	Terminal, Fuse
24		SUW1731	Bracket, Fuse P.C.B. Ass'y
25		SMP297	Holder, L.E.D.
26		SUW1737	Bracket, Equalizer P.C.B. Ass'y
27		SKUH8030M	Bottom Board
28		SKL227	Foot
29		SJF3045–7N	Terminal Board
30 [E] only		SGP2490–1A	Rear Panel
30		SGPH8030E	Rear Panel
30 [X, XA] only		SGP2490–2A	Rear Panel
31		SHR127	Bushing, AC Cord
31 [EK] only		SHR129	Bushing, AC Cord
31	⚠	**SJA88**	AC Cord
32 [EK] only	⚠	**QFC1205M**	AC Cord
32 [XL] only	⚠	**QFC1208M**	AC Cord
33		SMN1635	Bracket, Voltage Adjustment Switch
34 [X, XA] only	⚠	SJSA66–2	Socket, AC Outlet
SCREWS, WASHERS and NUTS			
51		**XTB3+8B**	Screw, Tapping, ⊕ 3 x 8
52		**XNS8**	Nut, M8
53		**XWC9B**	Washer, External Toothed Lock, φ9
54		**XTB3+8BFZ**	Screw, Tapping, ⊕ 3 x 8
55		**XWC3B**	Washer, External Toothed Lock, φ3
56		**XSN3+6BVS**	Screw, ⊕ 3 x 6
57		**XWC3B**	Washer, External Toothed Lock, φ3
58		**XNS12**	Nut, M12
59		SNE59–1	Washer
60		**XNS9**	Nut, M9
61		**XTN3+10B**	Screw, Tapping, ⊕ 3 x 10
62		**XWG3**	Washer, Plain, φ3
63		**XTB3+10BFZ**	Screw, Tapping, ⊕ 3 x 10
64		**XTB3+8BFN**	Screw, Tapping, ⊕ 3 x 8
65		**XTB3+8B**	Screw, Tapping, ⊕ 3 x 8
66		**XSN3+8S**	Screw, ⊕ 3 x 8
67		**XWA3B**	Washer, Spring, φ3
68	O	**XTB4+8BFN**	Screw, Tapping, ⊕ 4 x 8
68	K	**XTB4+8BFZ**	Screw, Tapping, ⊕ 4 x 8
69	O	**XTB3+8BFN**	Screw, Tapping, ⊕ 3 x 8
69	K	**XTB3+8BFZ**	Screw, Tapping, ⊕ 3 x 8
70		**XSN4+10BVS**	Screw, ⊕ 4 x 10
71		**XWA3B**	Washer, Spring, φ3
72		XTB3+16BFZ	Screw, Tapping, ⊕ 3 x 16

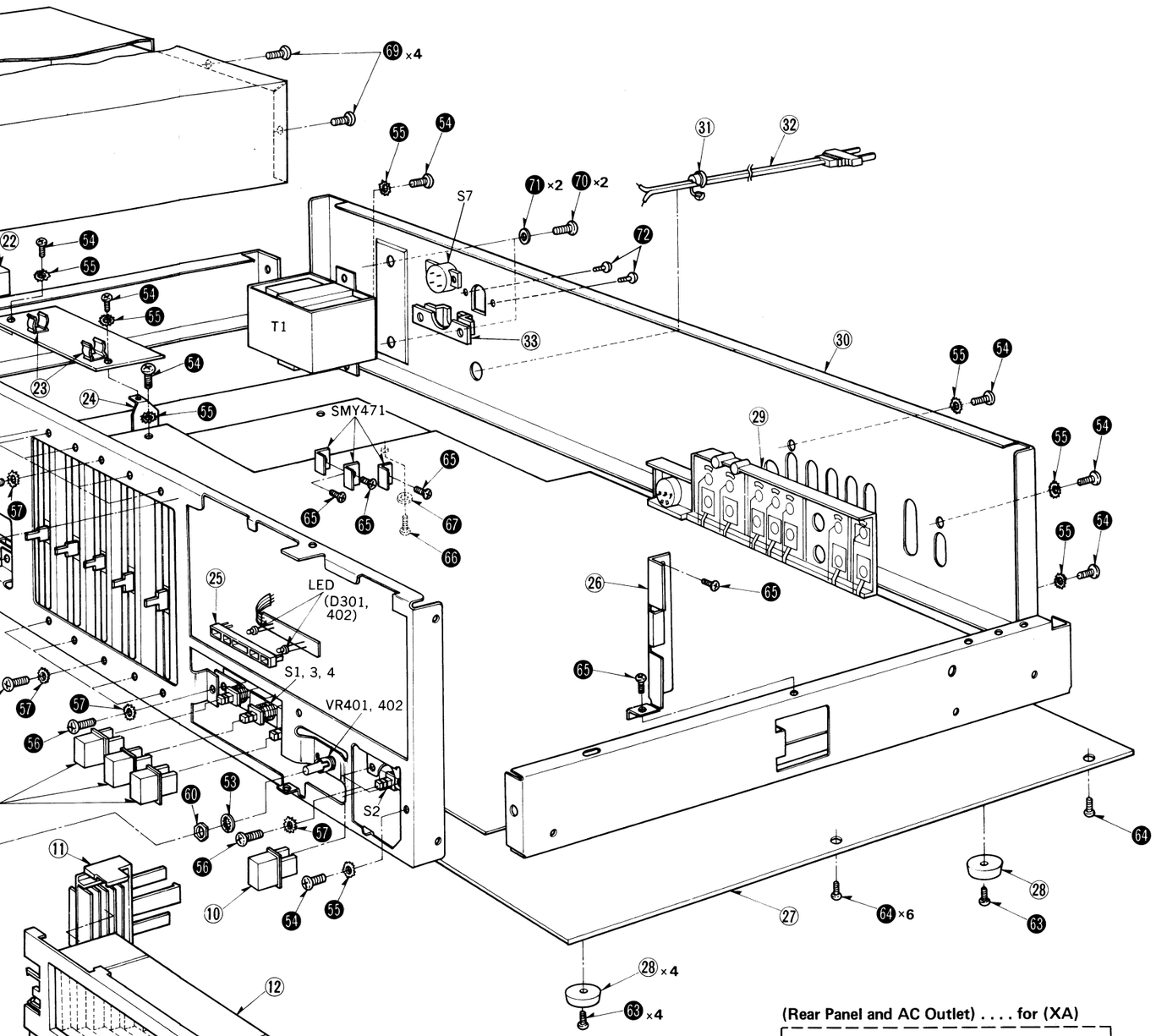
Ref. No.		Part No.	Part Name & Description
ACCESSORIES			
A1		SJP2129–5	Pin Cord
A2 [X, XA] only	⚠	SJP5213–1	Plug Adapter, AC Power
A3		SQF10695	Instructions Book, Printed Matter
A3 [X, XA] only		SQF10697	Instructions Book, Printed Matter
A3 [EI] only		SQF10719	Instructions Book, Printed Matter
PACKING PARTS			
P1		SPP649	Polyethylene Bag
P2		SPS3011	Pad, Left Side
P2 [XL] only		SPS3011-1	Pad, Left Side
P3		SPS3013	Pad, Right Side
P3 [XL] only		SPS3013–1	Pad, Right Side
P4		SPG2903	Carton Box
P4 [XL] only		SPG2905	Carton Box
P4 [EF] only		SPG2907	Carton Box

Areas

* [E] and [EG] are available in Scandinavia and European except United Kingdom, France, Holland, Belgium and Italy.
* [EK] is available in United Kingdom.
* [XL] is available in Australia.
* [XA] is available in Asia, Latin America, Middle East and Africa.
* [EF] is available in France.
* [EH] is available in Holland.
* [EB] is available in Belgium.
* [EI] is available in Italy.

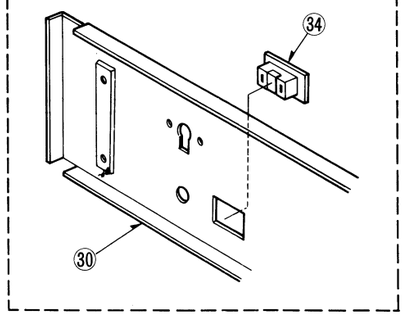
■ EXPLODED VIEW



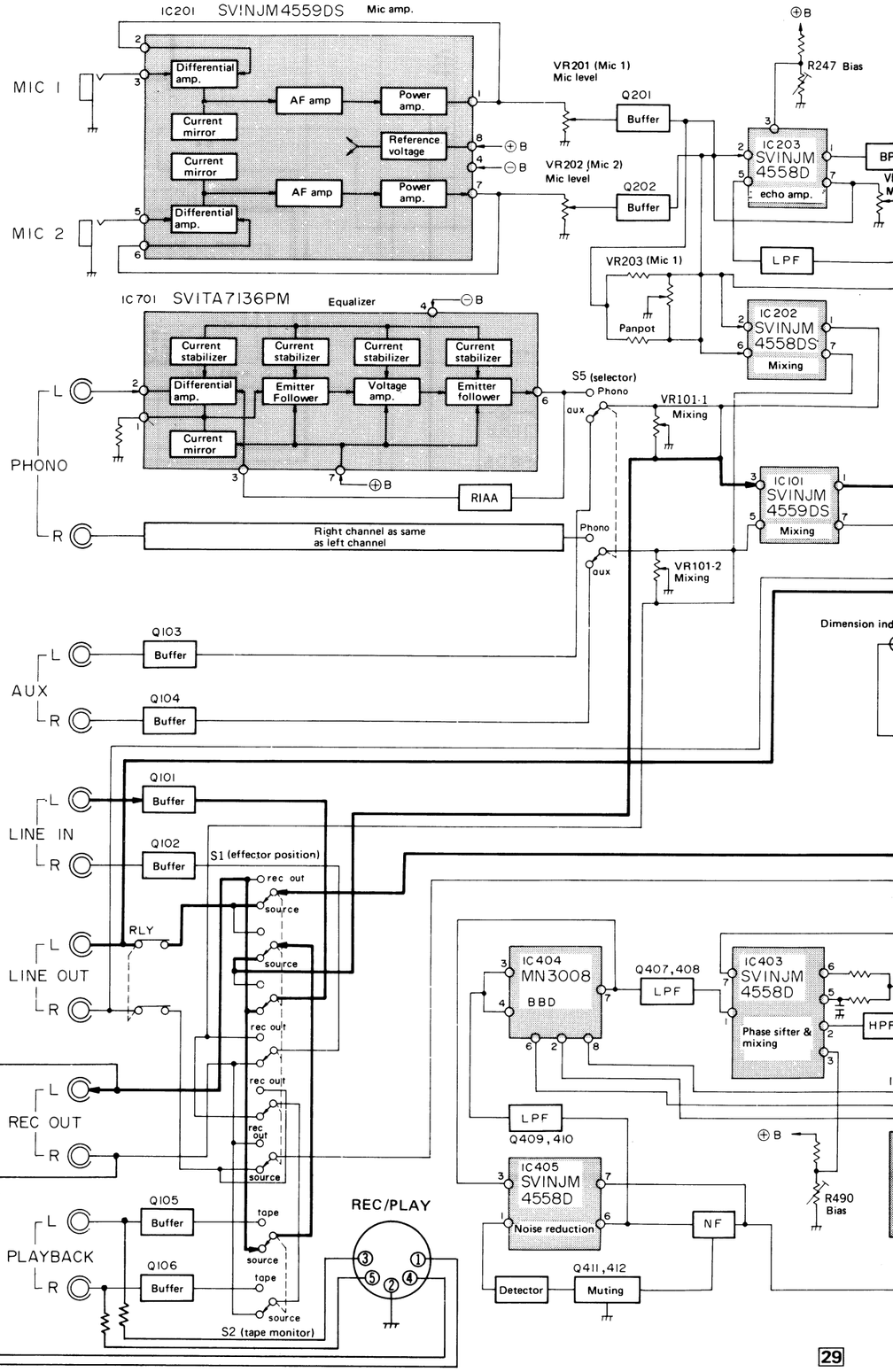


27 28

(Rear Panel and AC Outlet) . . . . for (XA)



■ BLOCK DIAGRAM



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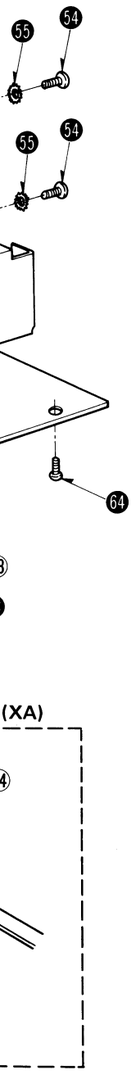
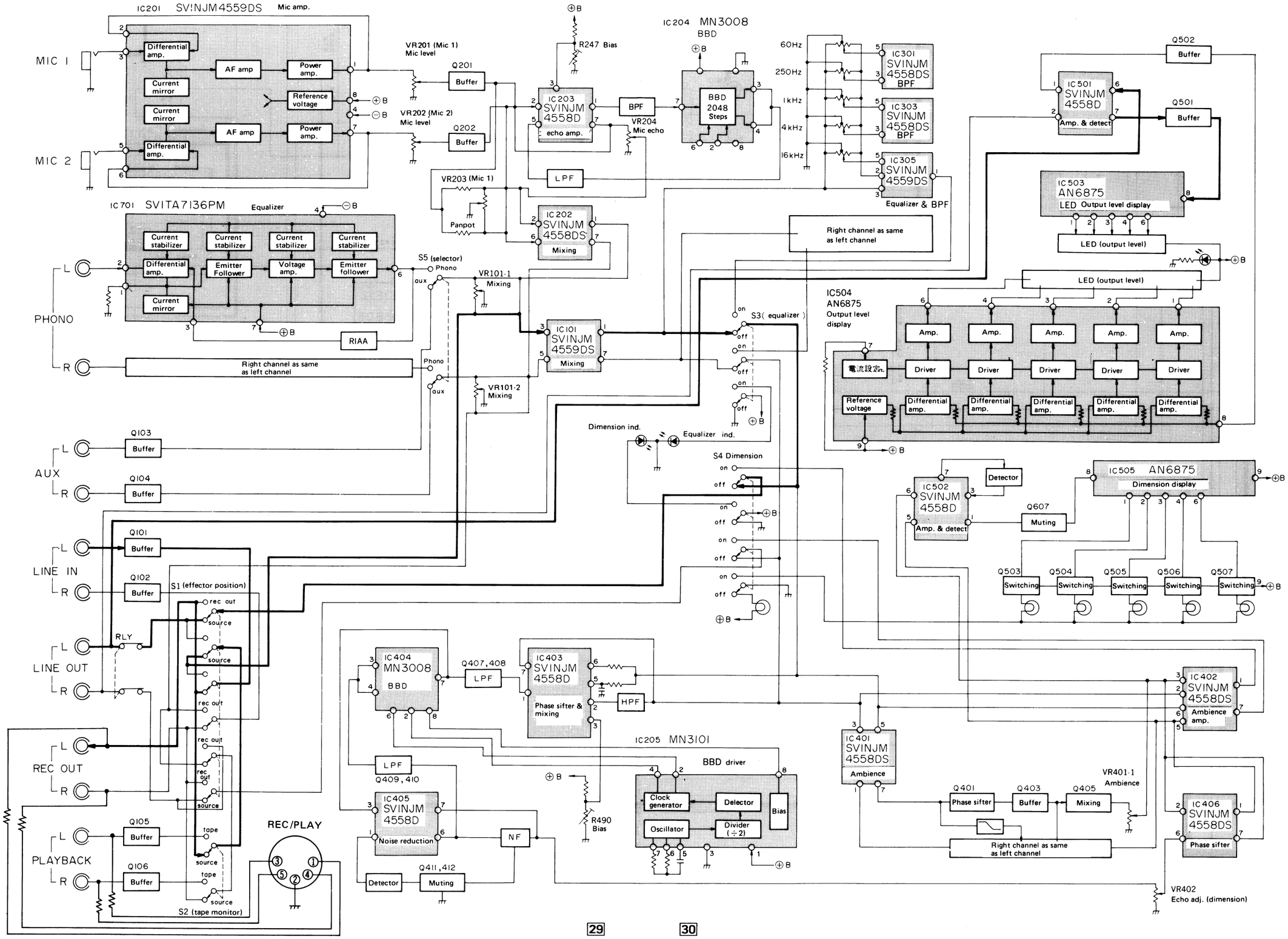
■ BLOCK DIAGRAM





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ORDER NO. SD81061960C2

Service Manual

Space Dimension Controller

SH-8030(K)

Area [Ei]

* [Ei] is available in Italy.

* The cabinet and front panel are available in black color and silver types.
* The black type model is provided with (K) in the Service Manual.

Please use this manual together with the service manual for Model No. SH-8030/K Order No. SD8012-1817.

CHANGES

■ REPLACEMENT PARTS LIST

Note: (K)-marked parts are used for black only.

Ref. No.	Change of Part No. SH-8030/K (ORDER NO. SD8012-1817)	→ SH-8030 (K) [Ei]	Part Name & Description	Per Set (Pcs.)	Remarks
CABINET and CHASSIS PARTS					
1	SYW353 SYW353–1 (K)	SYW353–1 (K)	Front Panel (Black)	1	
20	SKC610S1 SKC610B1 (K)	SKC610B1 (K)	Cabinet Cover (Black)	1	
30	SGP2490–1A SGPH8030E SGP2490–2A	SGPH8030E	Rear Panel	1	
31	SHR127 SHR129	SHR127	Bushing, AC Cord	1	
32	SJA88 QFC1205M QFC1208M	**SJA88**	AC Cord	1	
SCREWS, WASHERS and NUTS					
68	XTB4+8BFN XTB4+8BFZ (K)	**XTB4+8BFZ** (K)	Screw, Tapping, ⊕ 4 x 8	4	WDD
69	XTB3+8BFN XTB3+8BFZ (K)	**XTB3+8BFZ** (K)	Screw, Tapping, ⊕ 3 x 8	5	WDD
ACCESSORIES					
A3	SQF10695 SQF10697 SQF10719	SQF10719–1	Instructions Book Printed Matter	1	
PACKING PARTS					
P2	SPS3011 SPS3011–1	SPS3011	Pad, Left Side	1	
P3	SPS3013 SPS3013–1	SPS3013	Pad, Right Side	1	
P4	SPG2903 SPG2905 SPG2907	SPG2903	Carton Box	1	

Technics

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